



THE FEDERAL RESERVE BANK *of* MINNEAPOLIS

Economic Impact of Bakken Energy Production

Rob Grunewald

October 30, 2015



FEDGAZETTE

April 20, 2015

Working on the railroad

PHIL DAVIES | Senior Writer

Ninth District railroads have invested heavily to increase capacity. But matching rail supply to demand remains a work in progress.



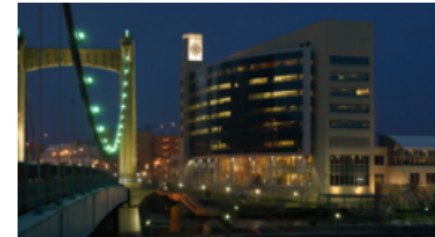
PRESIDENT'S SPEECHES

April 14, 2015

Opening Remarks

NARAYANA KOCHERLAKOTA | President

A Town Hall Forum at Winona State University
[Video of remarks and Q&A](#)



Federal Reserve Bank of Minneapolis

The Federal Reserve System is the central bank of the United States. Congress created the Federal Reserve through a law passed in 1913, charging it with a responsibility to foster a sound banking system and a healthy economy. This broad mission remains today for the Federal Reserve Bank of Minneapolis and the 11 other Federal Reserve Banks, each serving a specific region of the country.

The Minneapolis Fed, with one branch in Helena, Montana, serves the six states of the Ninth Federal Reserve District: Minnesota, Montana, North and South Dakota, 26 counties in northwestern Wisconsin and the Upper Peninsula of Michigan.

Special Features

[The Bakken Oil Boom](#)

[Community Banking Research](#)

[Current and Historical Market Based Probabilities](#)

[Consumer Credit Conditions](#)

[Early Childhood Development](#)

Latest from the Minneapolis Fed

COMMUNITY DIVIDEND

April 21, 2015

LIHTC priorities capture state affordable housing needs

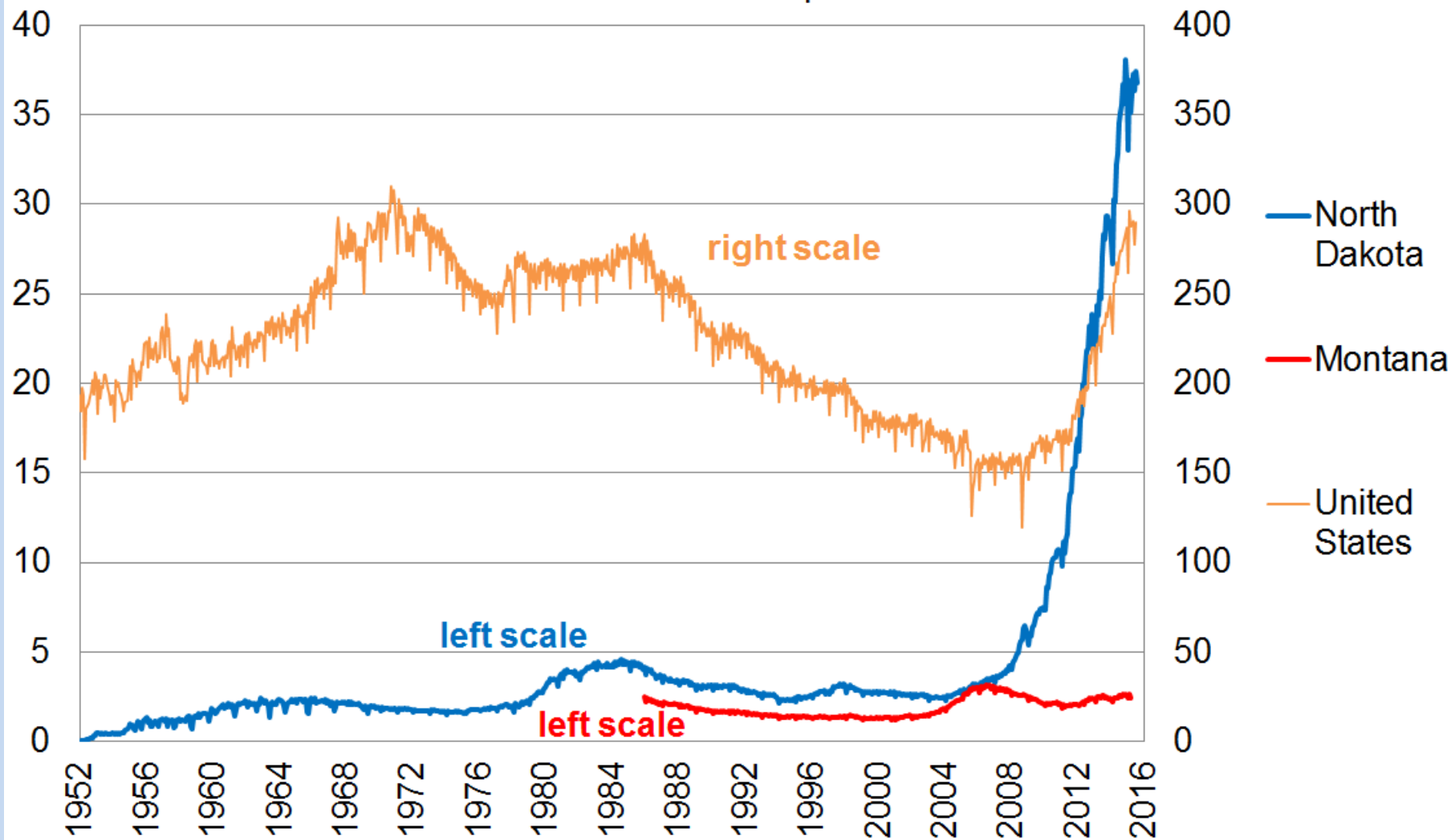
JACOB WASCALUS | Community Development Project Manager



[President Narayana Kocherlakota](#)

Oil production

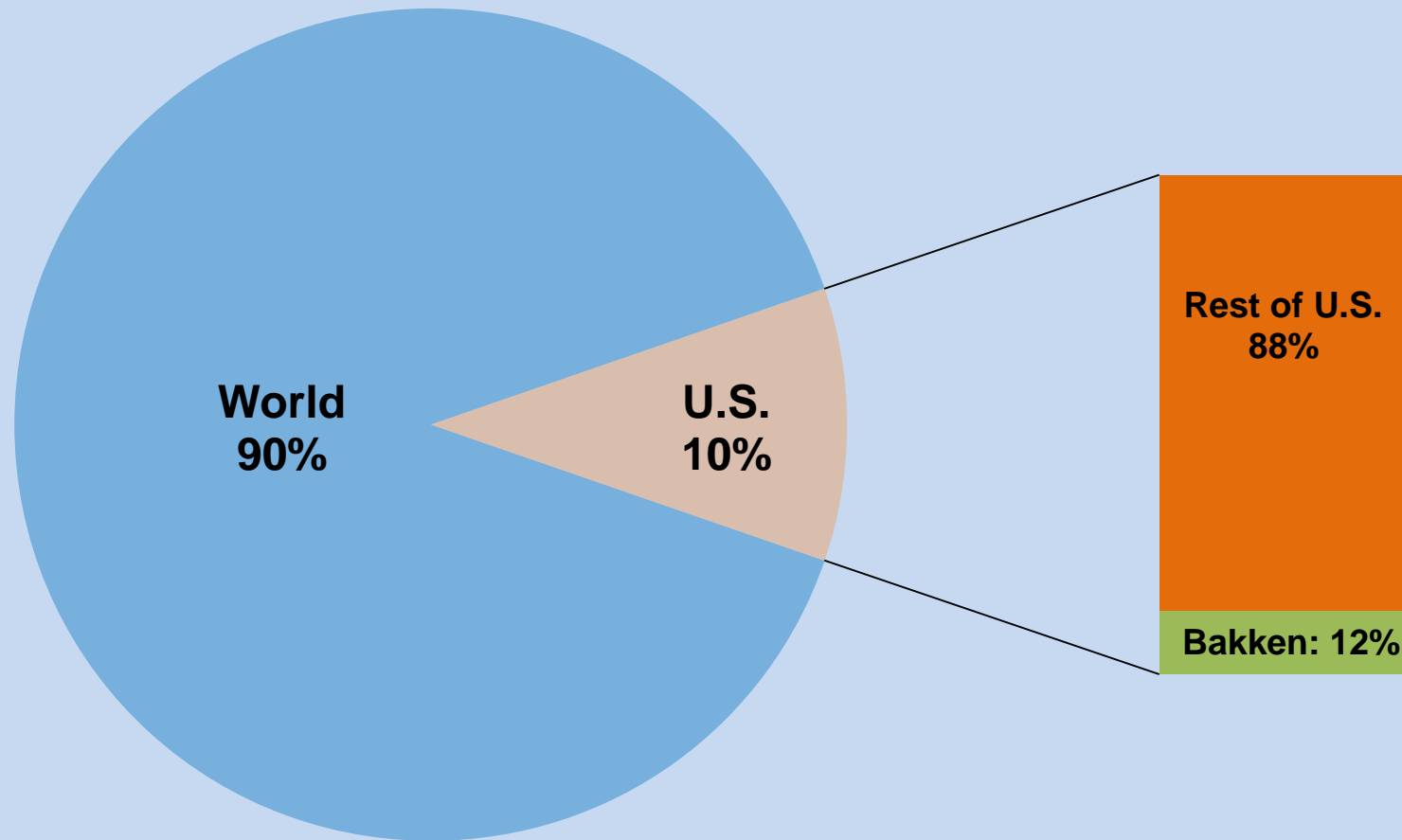
Millions of barrels per month



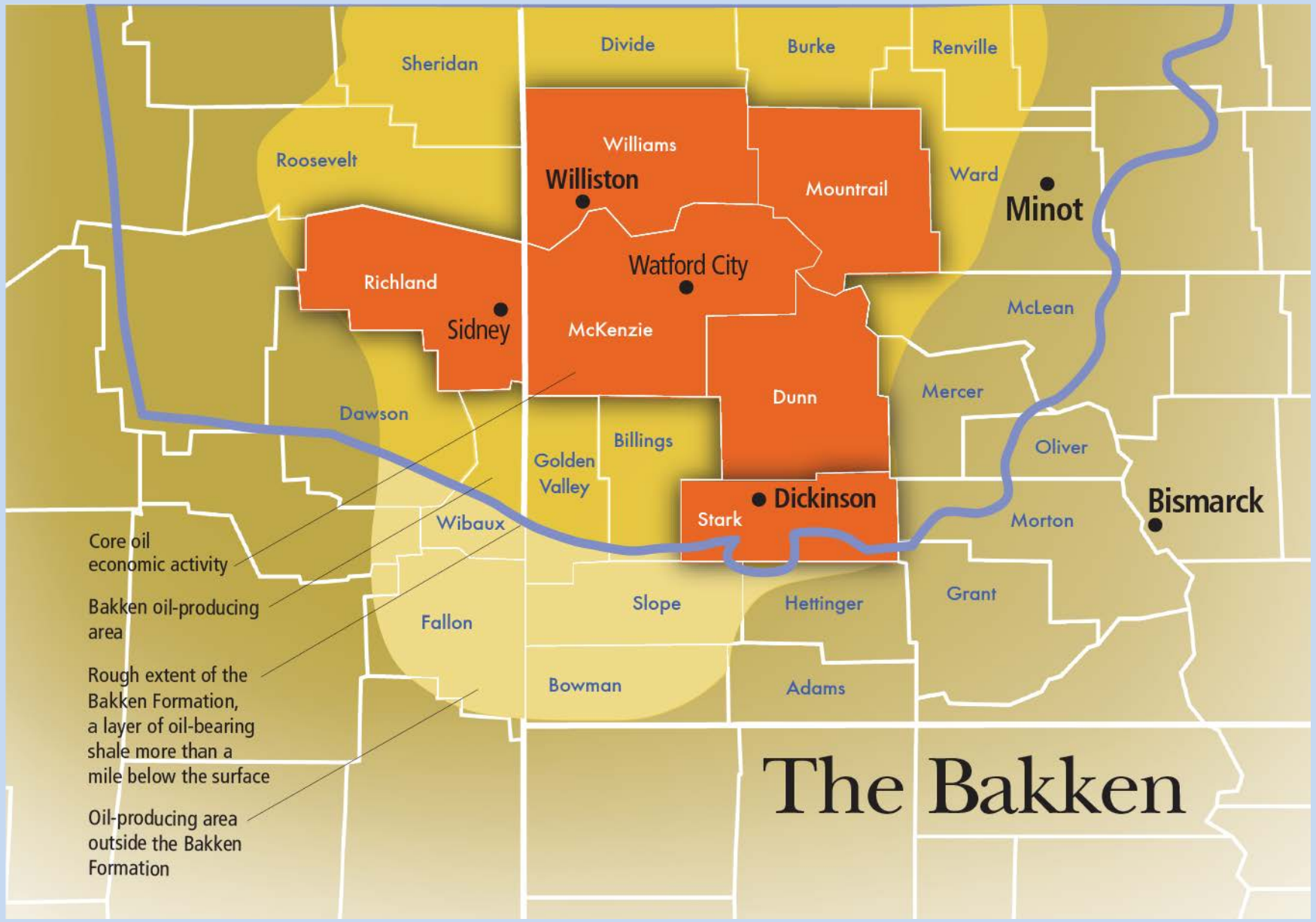
Source: U.S. Energy Information Administration, North Dakota Department of Mineral Resources, and Montana Board of Oil and Gas Conservation

Global oil production shares by source

2014



Source: Energy Information Agency, NDIC, Department of Mineral Resources and Montana Board of Oil and Gas Conservation



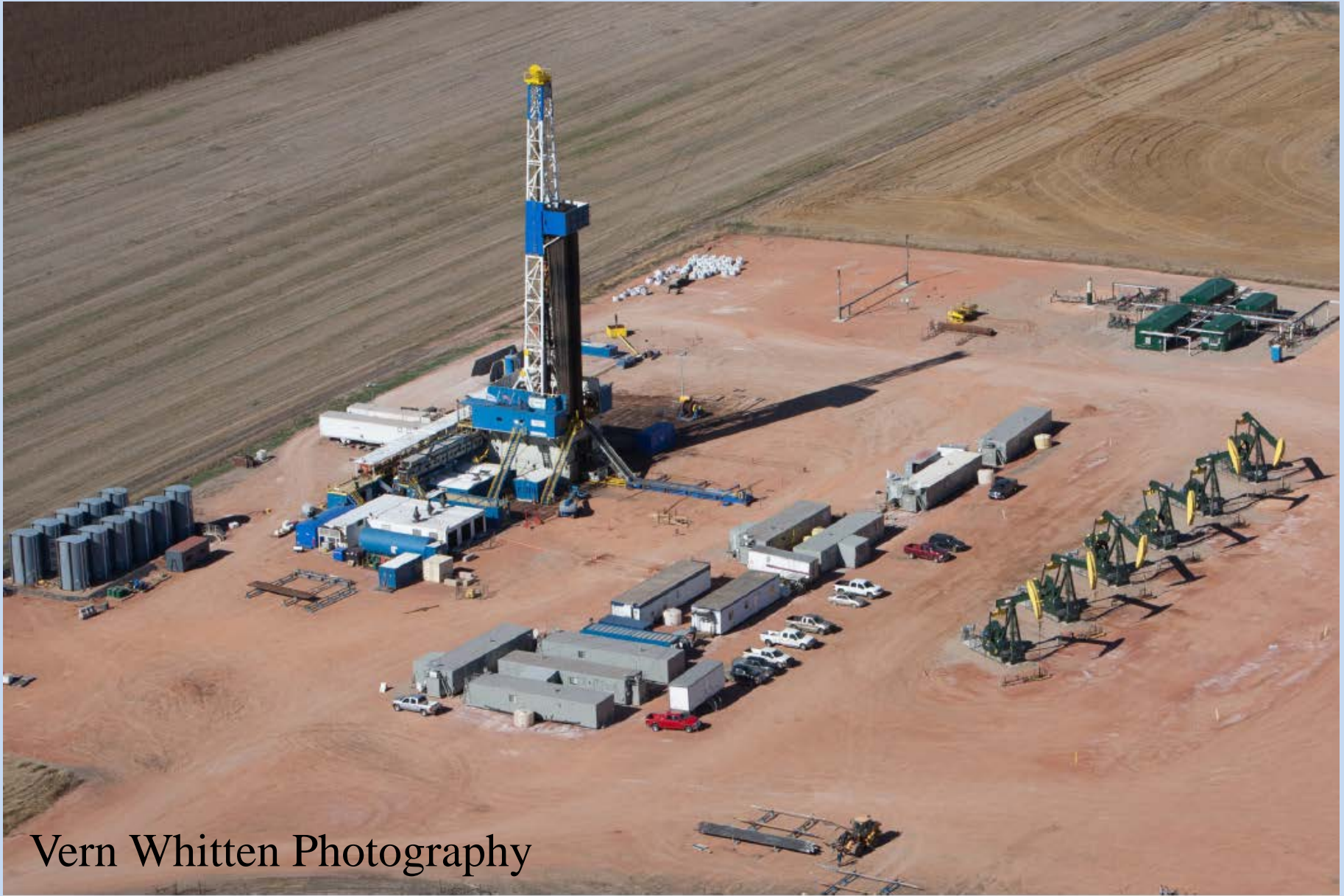
Core oil economic activity

Bakken oil-producing area

Rough extent of the Bakken Formation, a layer of oil-bearing shale more than a mile below the surface

Oil-producing area outside the Bakken Formation

The Bakken



Vern Whitten Photography

Source: NDIC, Department of Mineral Resources



Vern Whitten Photography

Source: NDIC, Department of Mineral Resources



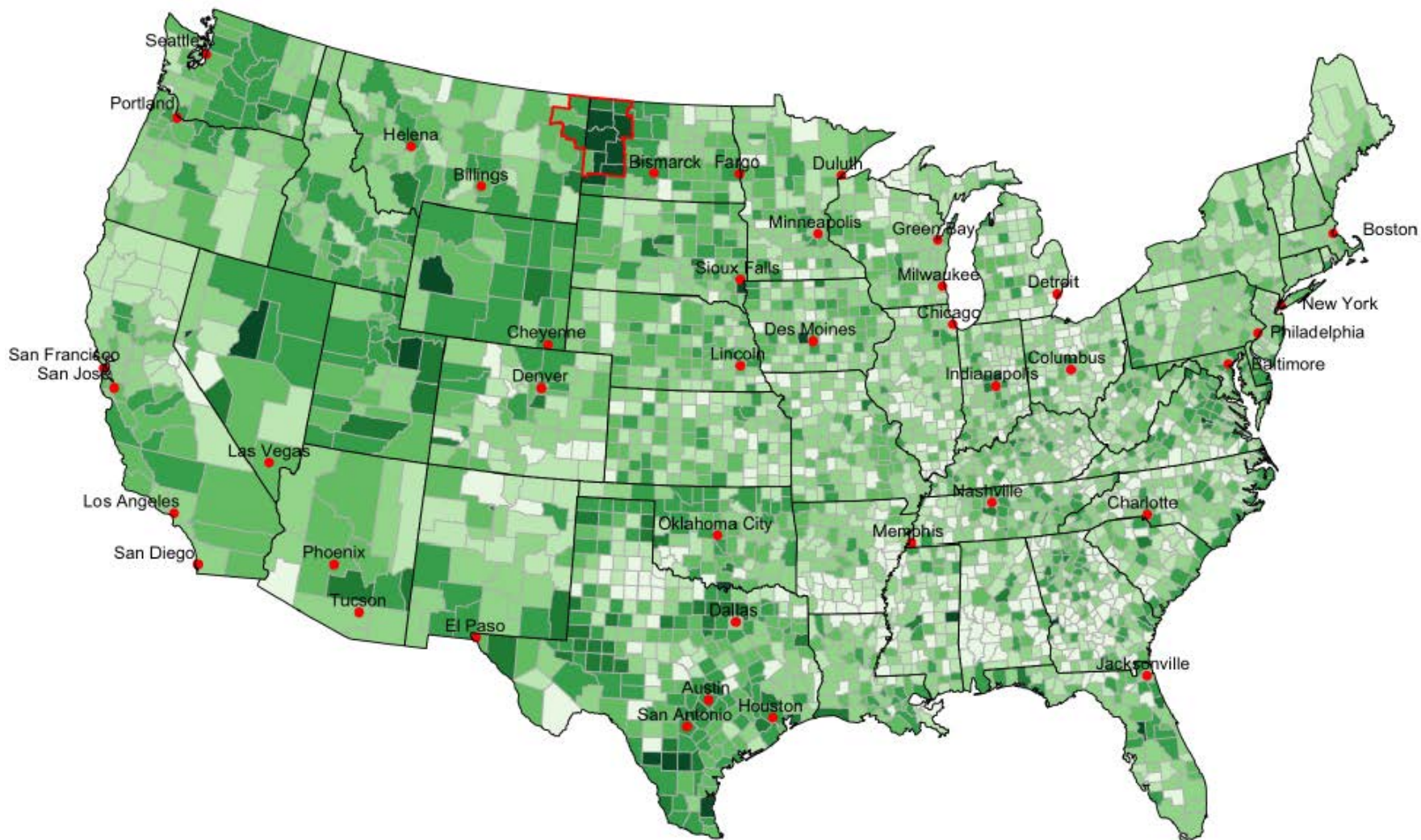
Source: Federal Reserve Bank of Minneapolis



Source: Federal Reserve Bank of Minneapolis

Nonfarm employment by county

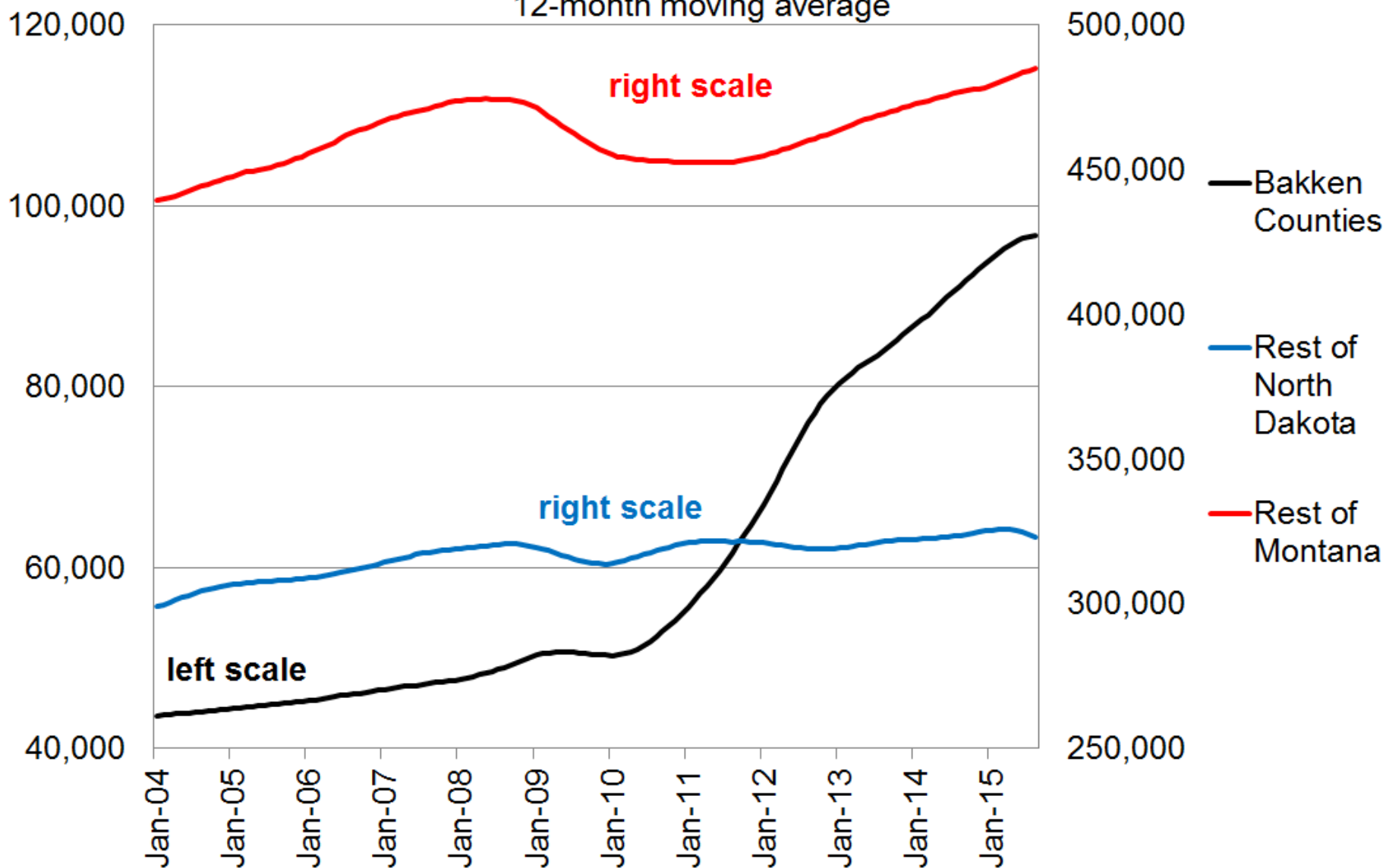
Percent change from 2003 Q1 to 2014 Q2



Percent change Less than -10 -10 to 0 0 to 10 10 to 20 20 to 50 50 to 100 More than 100

Employment

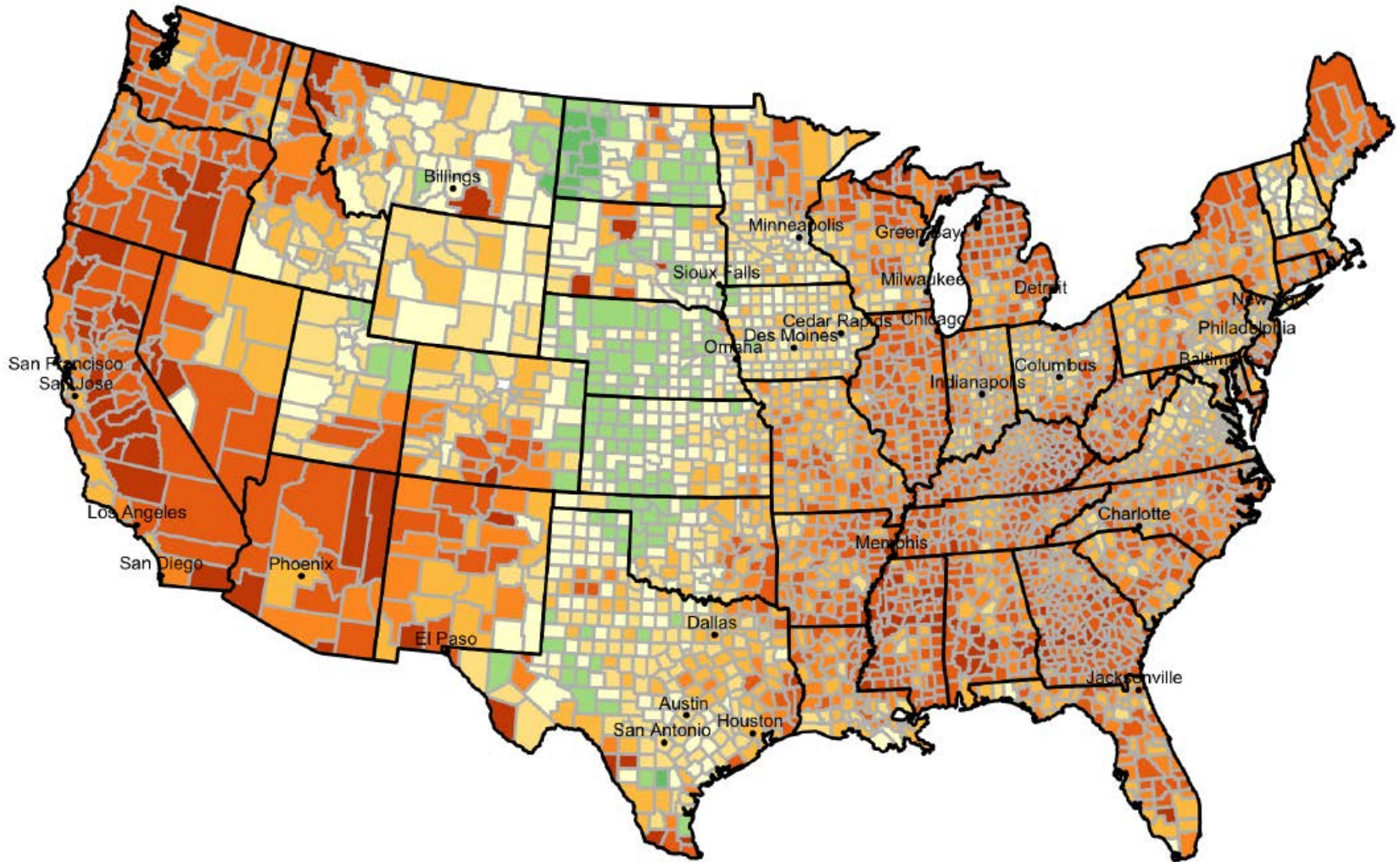
12-month moving average



Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics

Unemployment rate by county

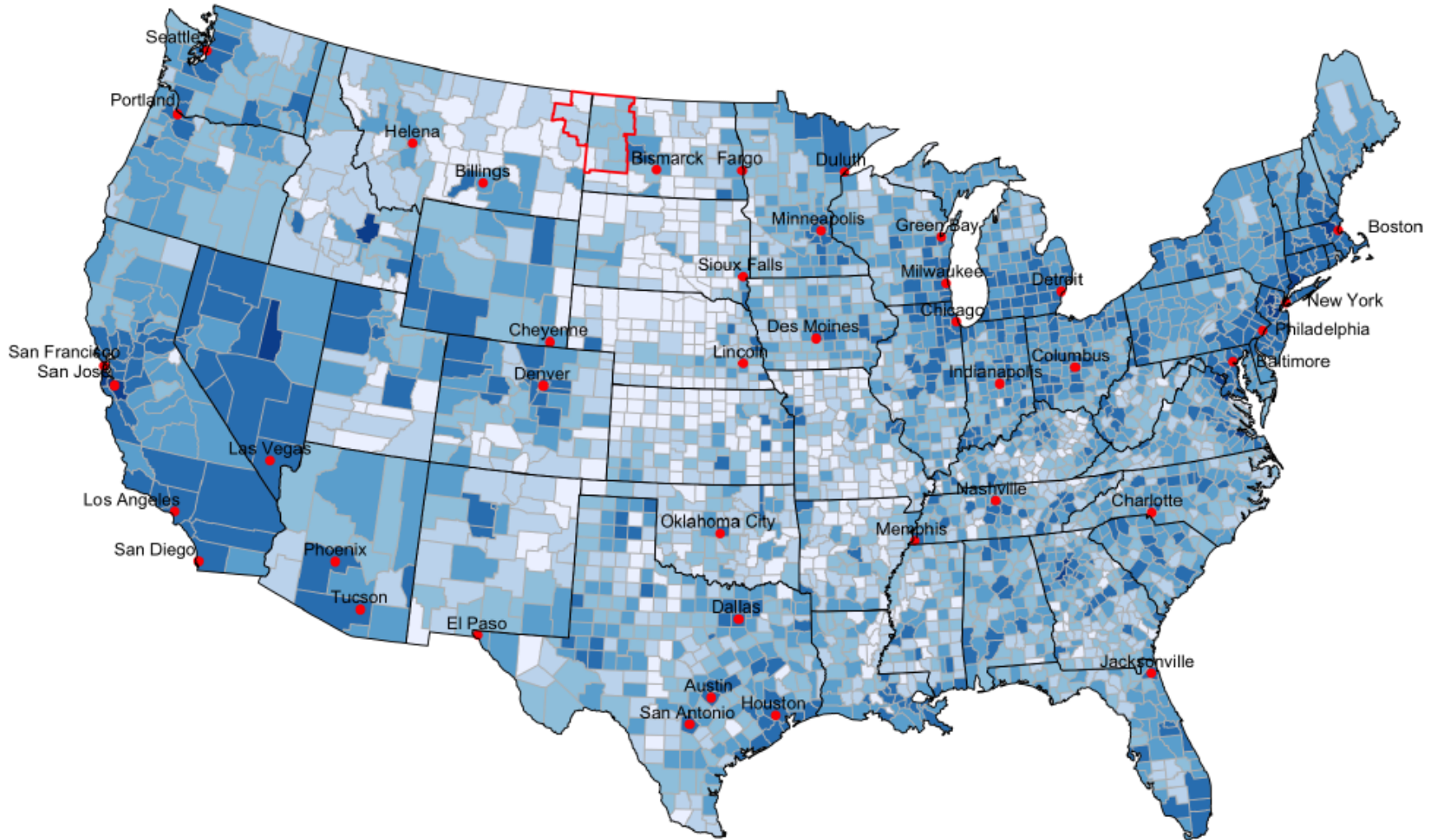
2014



Percent ■ Less than 2 ■ 2 to 3 ■ 3 to 4 ■ 4 to 5 ■ 5 to 6 ■ 6 to 7 ■ 7 to 15 ■ Greater than 15

Average weekly wages by county

2003 Q1

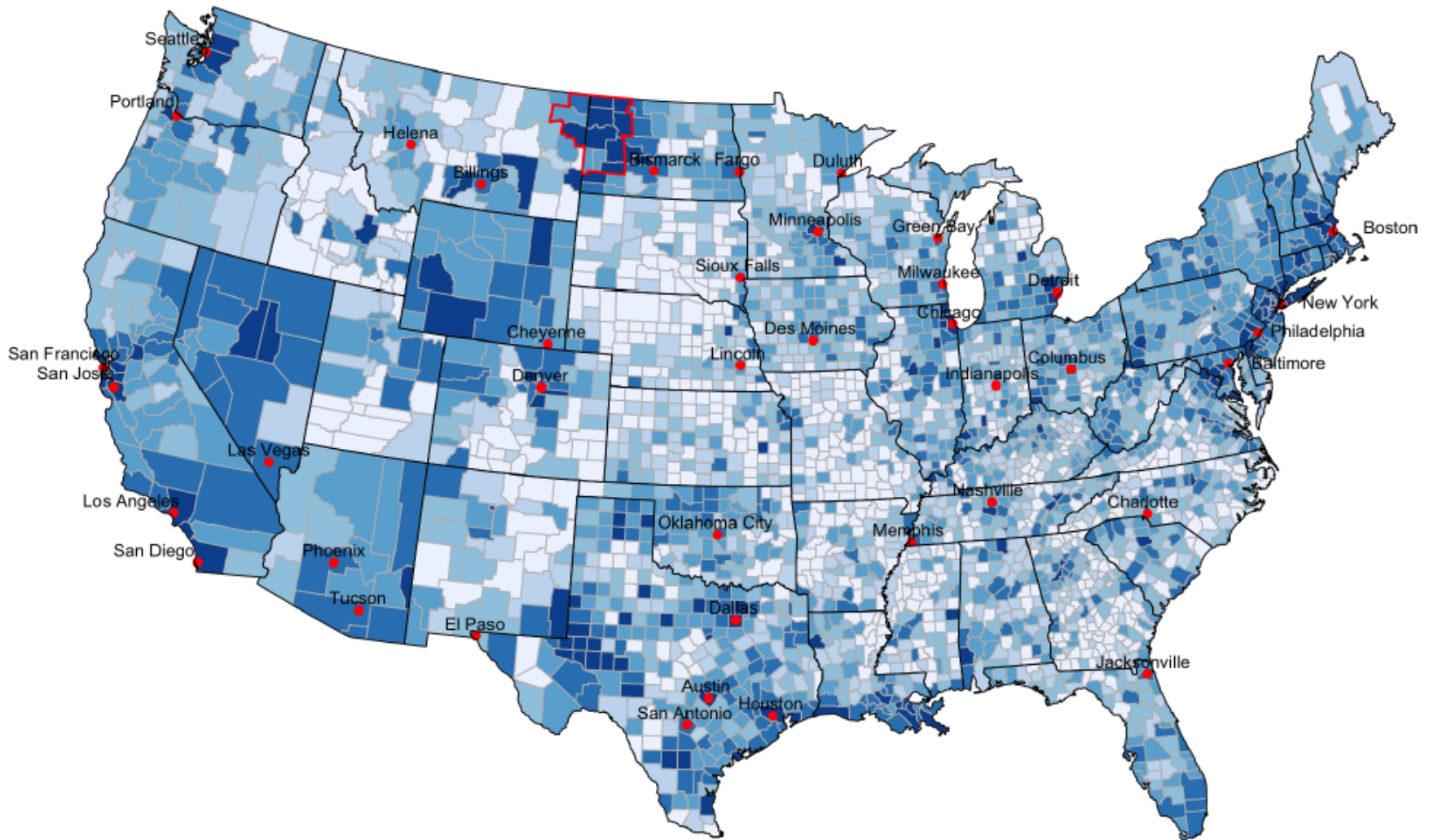


Average weekly wage

Less than \$400	\$400 to \$450	\$450 to \$500	\$500 to \$600	\$600 to \$1,000	Greater than \$1,000
-----------------	----------------	----------------	----------------	------------------	----------------------

Average weekly wages by county

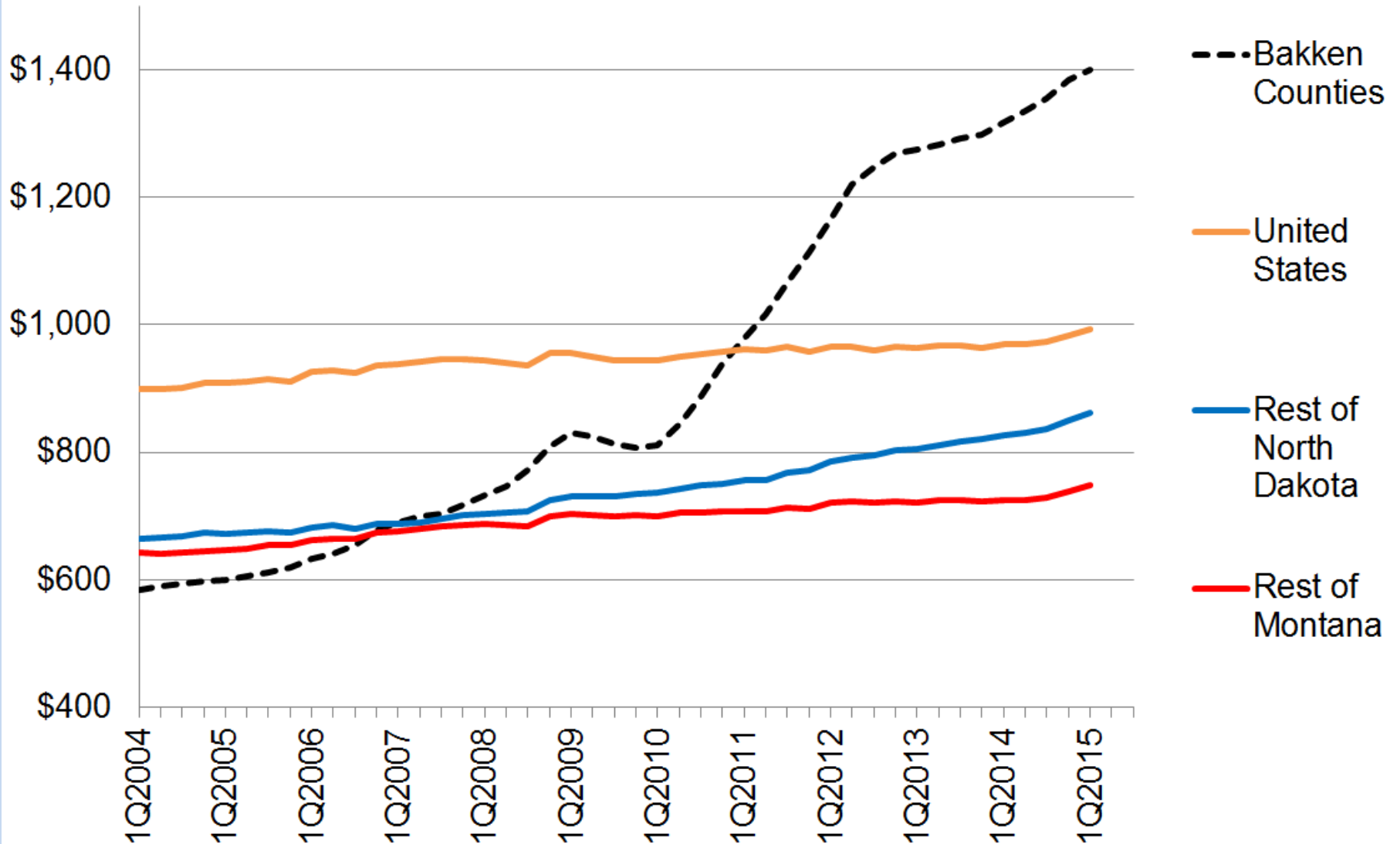
2014 Q2



Average weekly wage Less than \$600 \$600 to \$650 \$650 to \$700 \$700 to \$800 \$800 to \$1,000 Greater than \$1,000

Average weekly wages

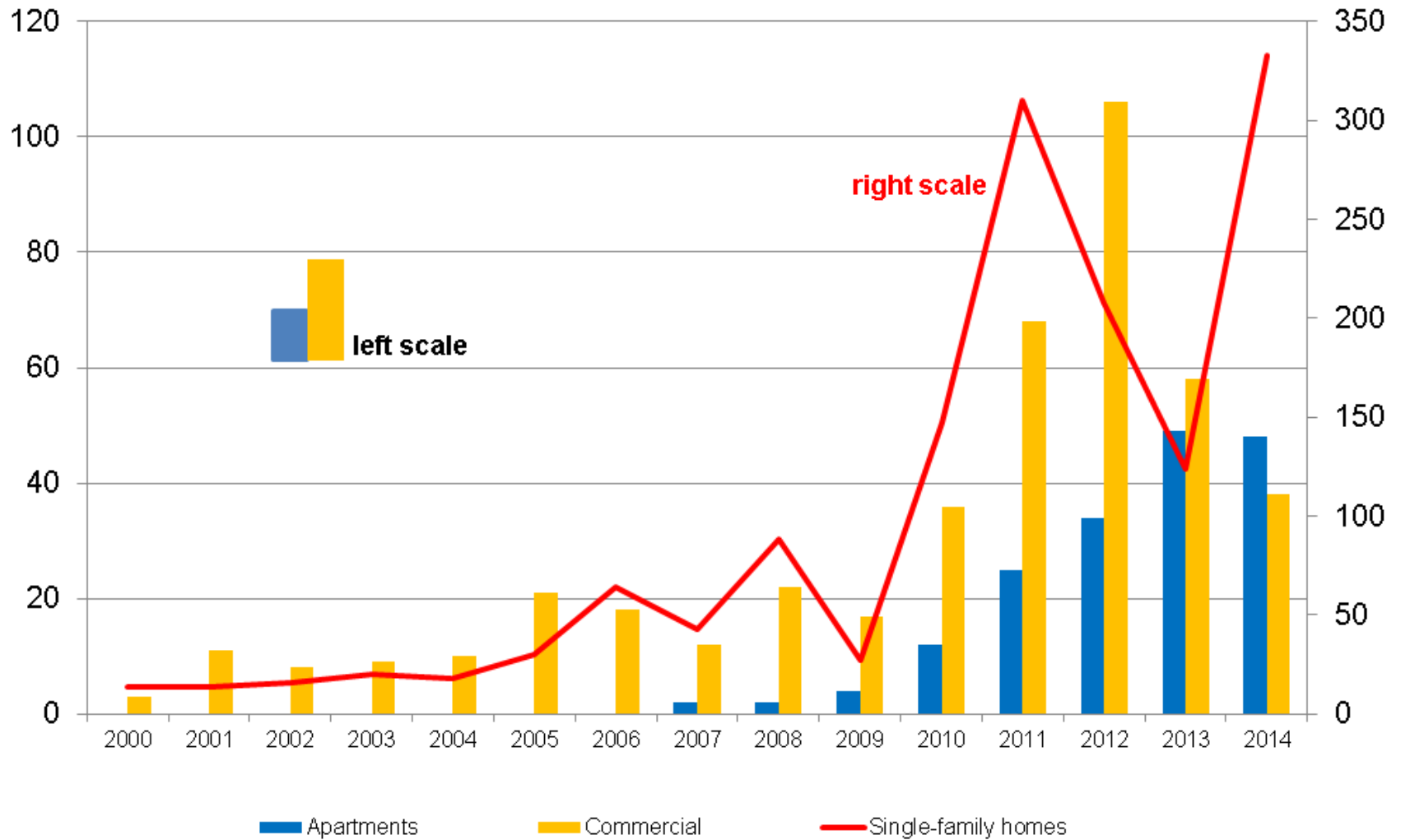
4-quarter moving average in 2014 dollars



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

City of Williston

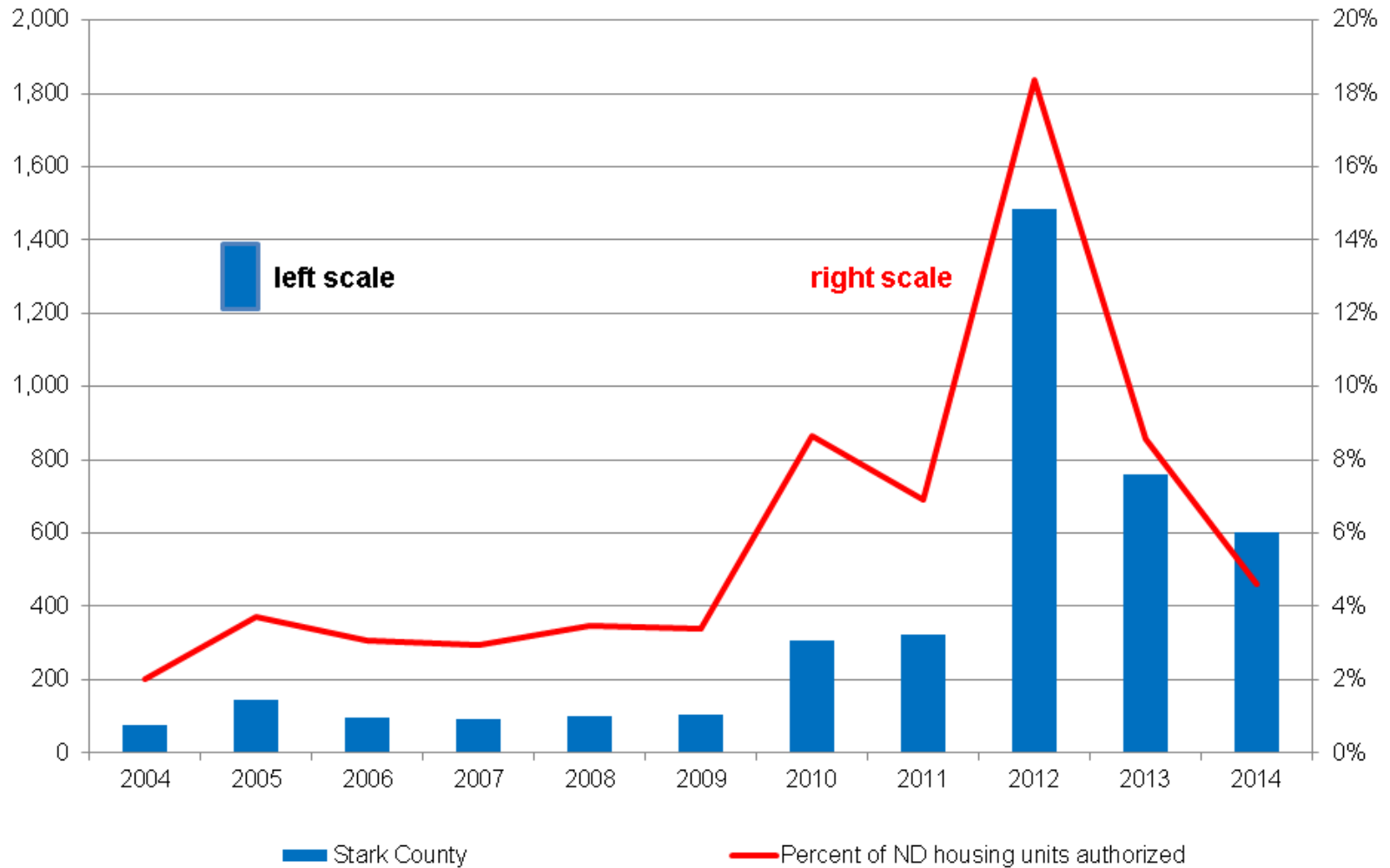
Number of building permits for new construction



Source: City of Williston

Stark County

Housing units authorized



Source: U.S. Census Bureau

24,000 crew camp beds provided housing to
over 30,000 oilfield workers



Crew camps near Williston, N.D.

Source: Federal Reserve Bank of Minneapolis

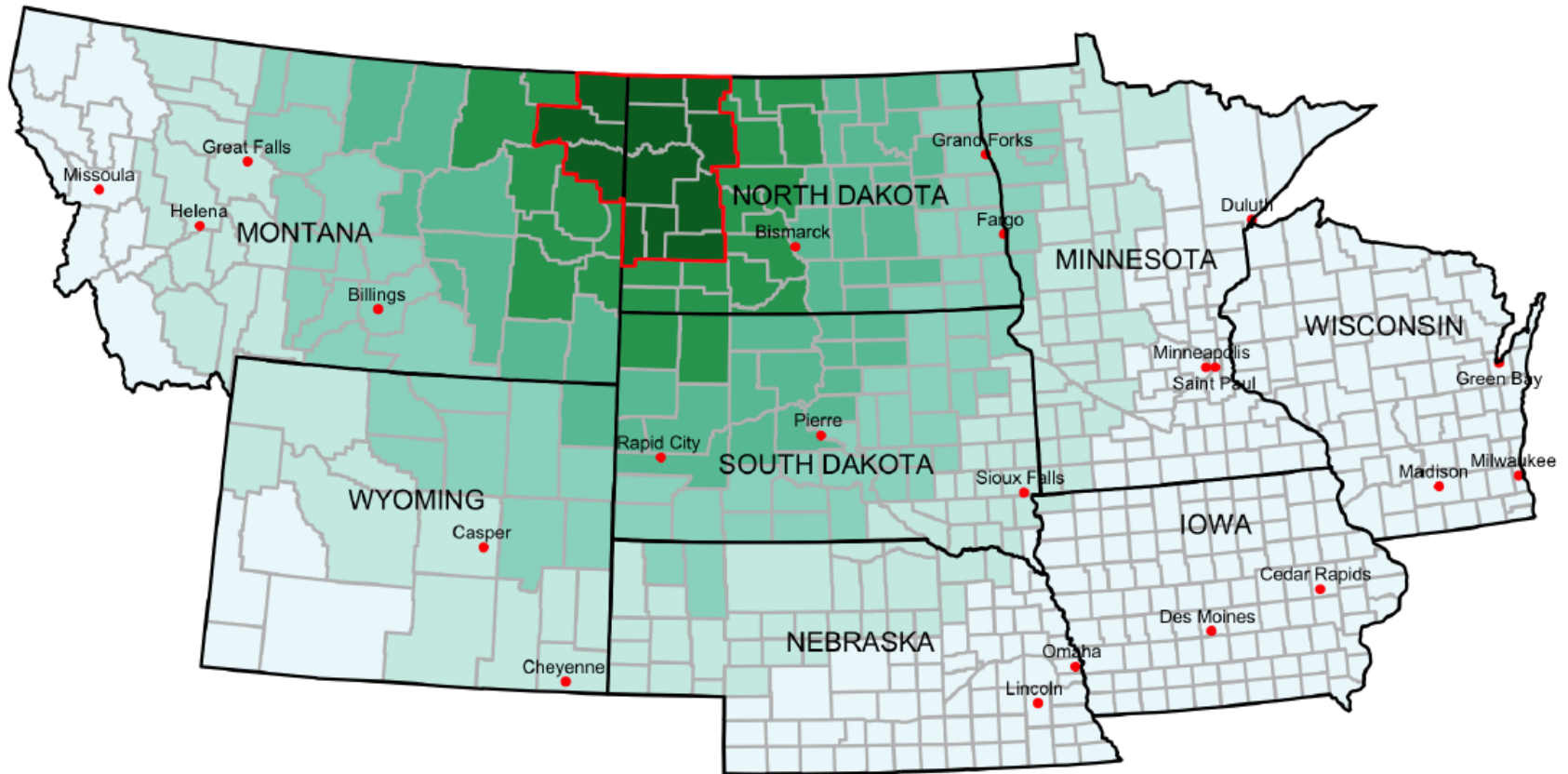
Many examples of improvised housing



Alexander, N.D.

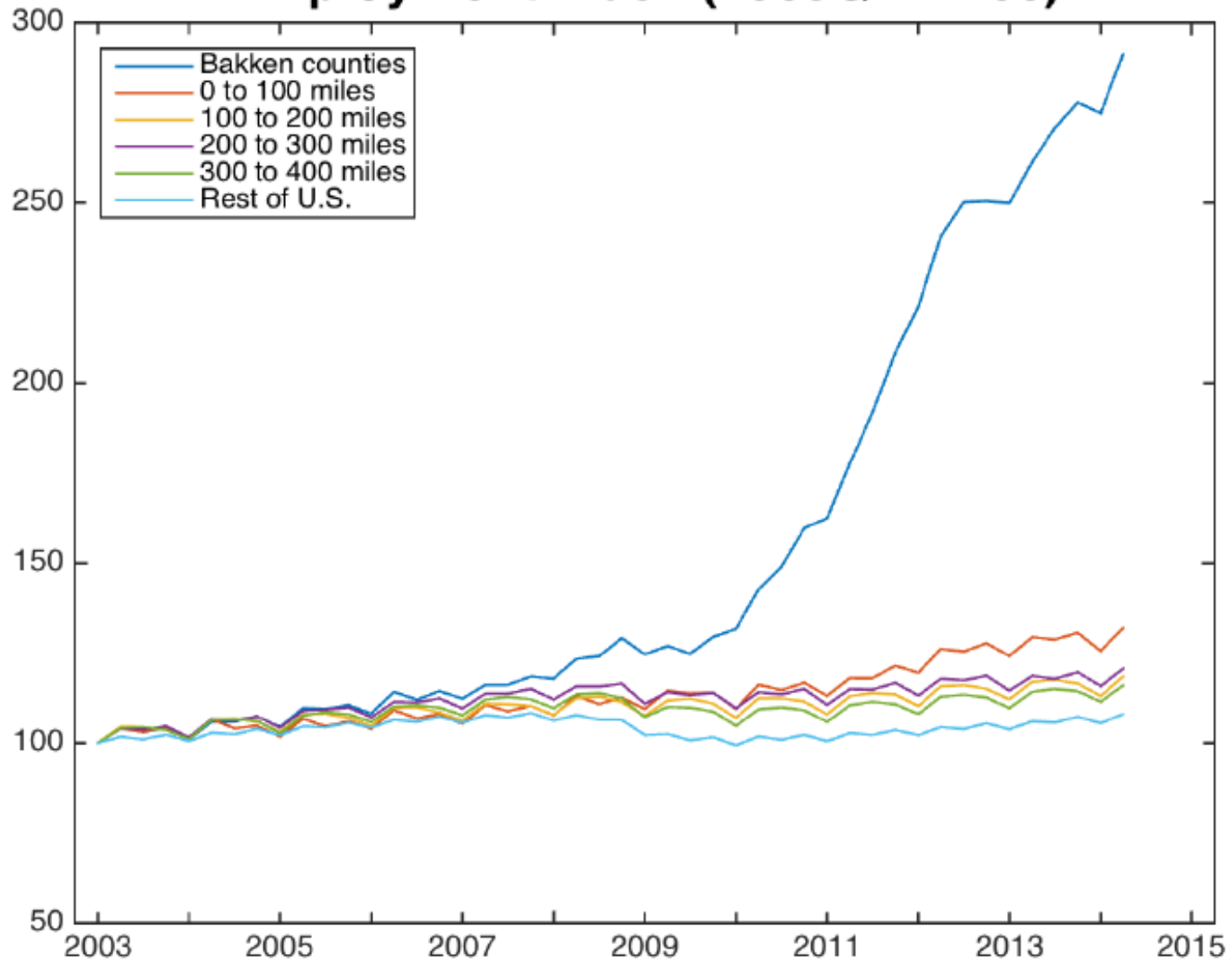
Source: Federal Reserve Bank of Minneapolis

Bakken activity: How wide is the ripple effect?



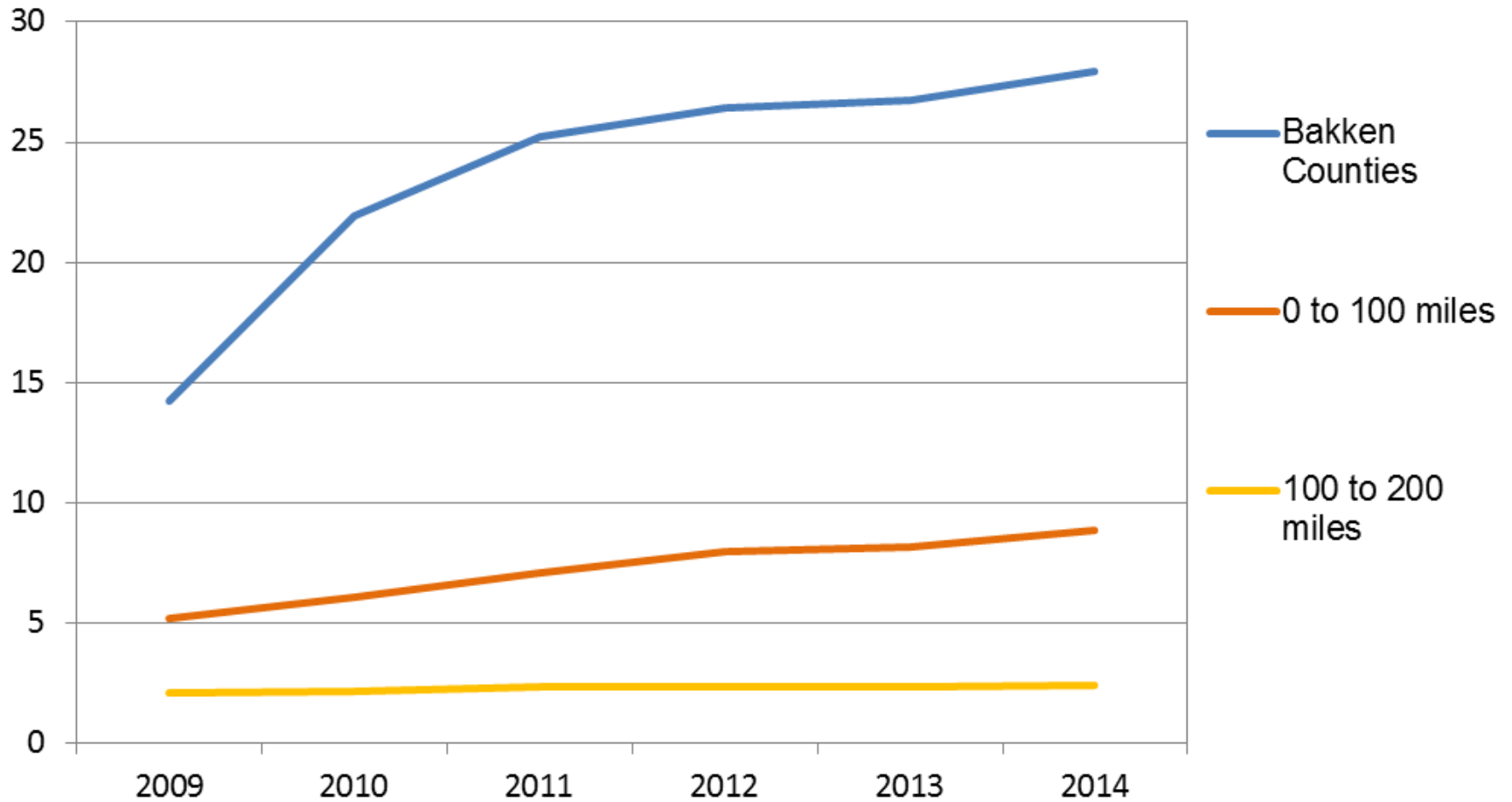
Distance bands Bakken 0 to 100 miles 100 to 200 miles 200 to 300 miles 300 to 400 miles Rest of U.S.

Employment index (2003Q1 = 100)



Source: Minneapolis Fed calculations based on QCEW data, Bureau of Labor Statistics

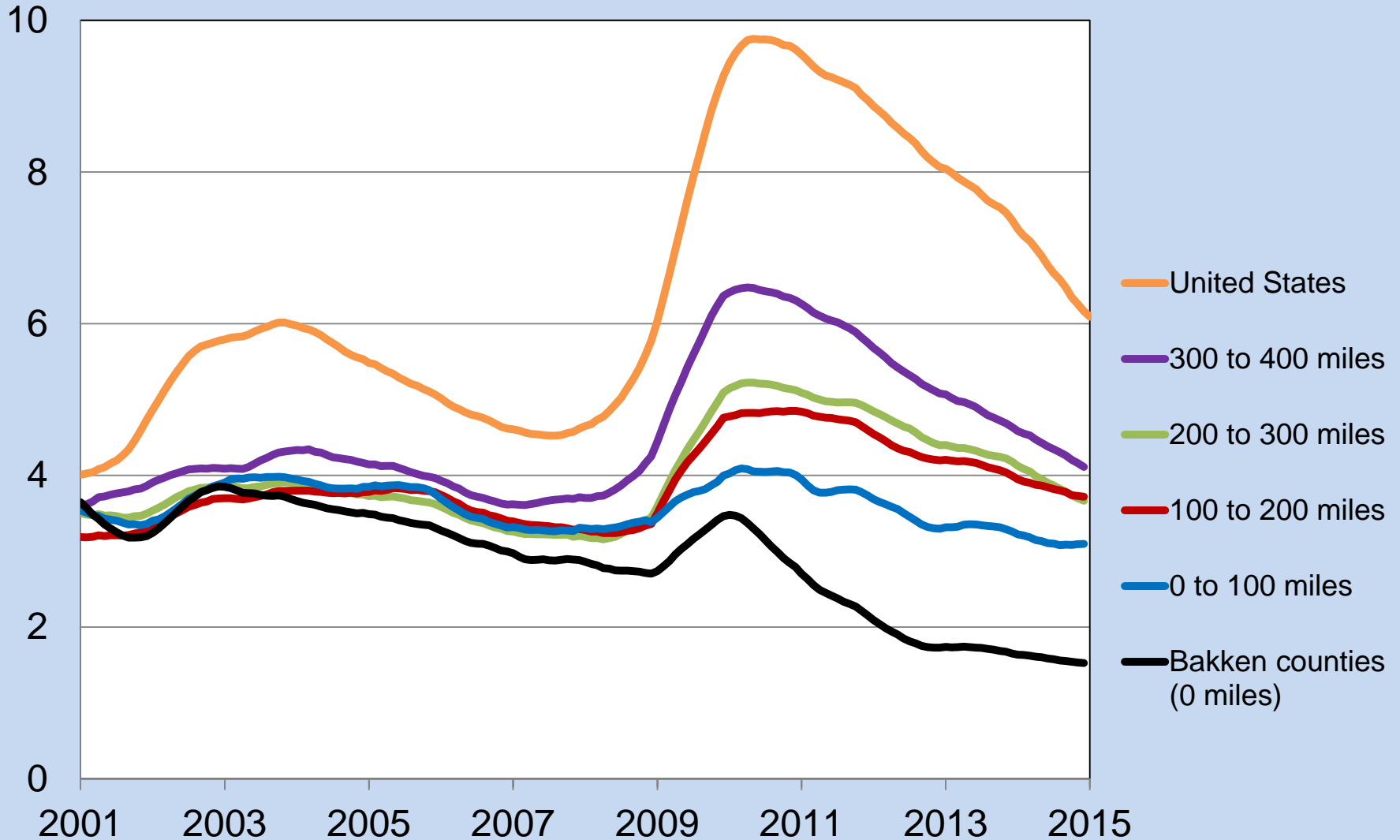
Natural resources and mining employment as a percent of total employment



Source: Minneapolis Fed calculations based on QCEW data, Bureau of Labor Statistics

Unemployment rate by distance from the Bakken

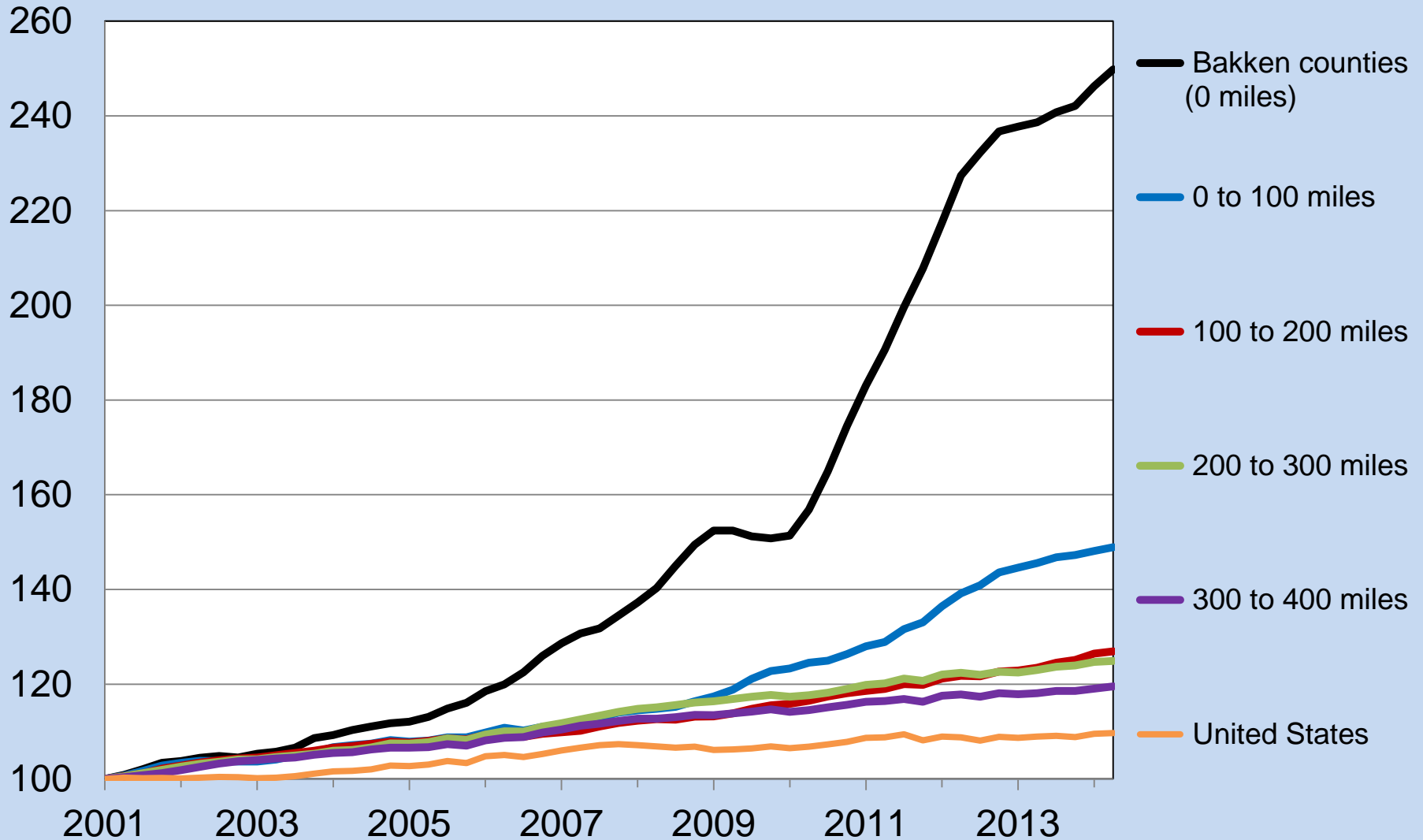
12-month moving average



Source: Minneapolis Fed calculations based on LAUS data, Bureau of Labor Statistics

Index of average weekly wages by distance from the Bakken

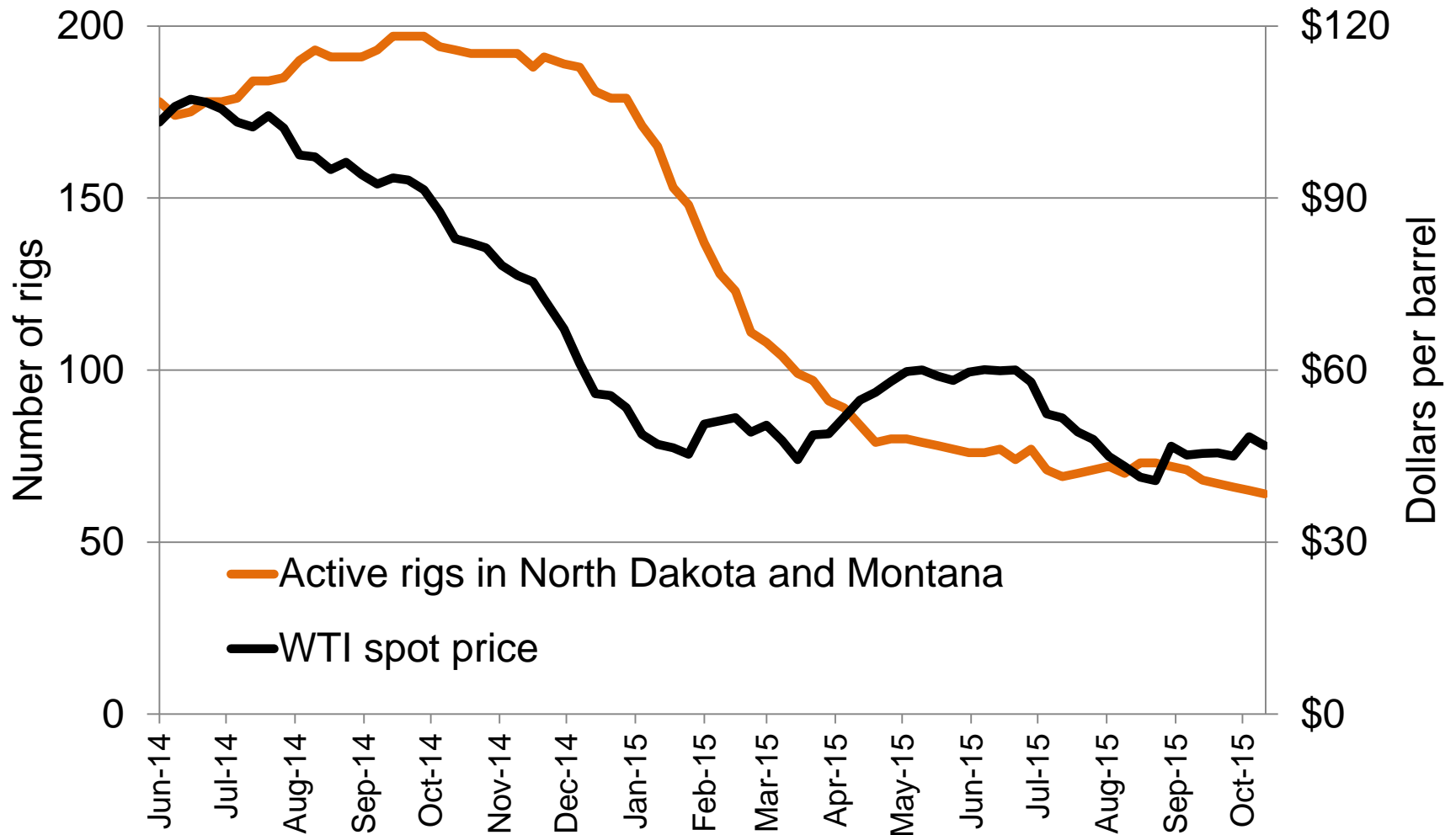
4-quarter moving average, inflation-adjusted



Source: Minneapolis Fed calculations based on QCEW data, Bureau of Labor Statistics

Active oil drilling rigs and oil prices

Weekly averages

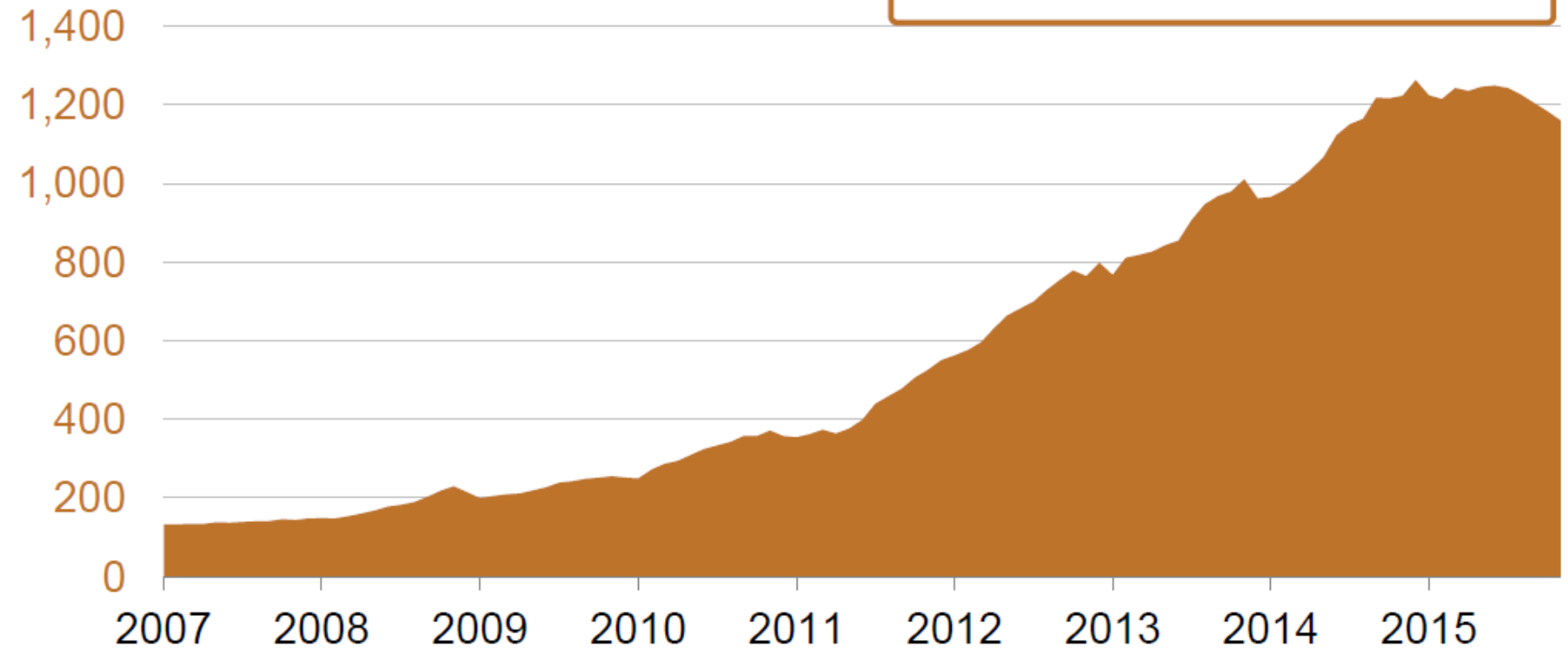


Source: Energy Information Administration and Baker Hughes Investor Relations

October to November projections

Bakken Region Oil production

thousand barrels/day

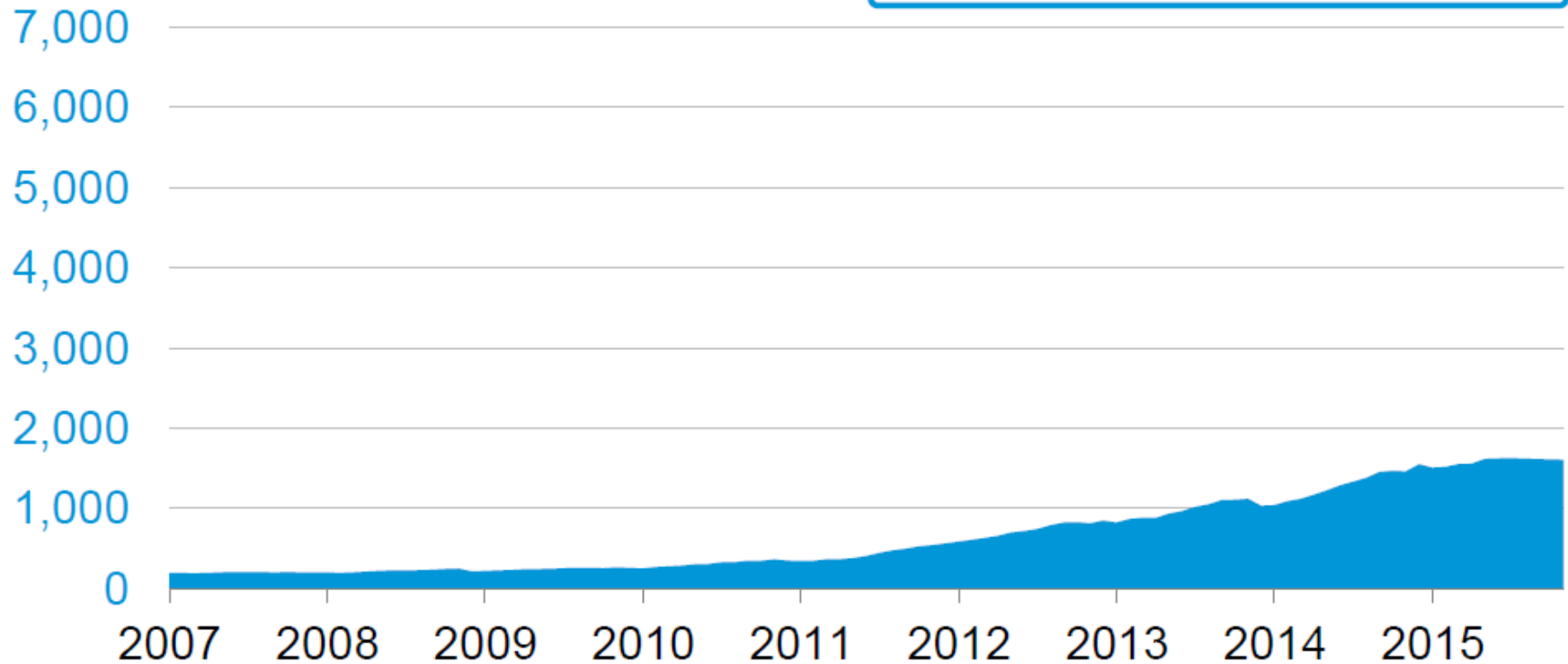


Source: U.S. Energy Information Administration

October to November projections

Bakken Region Natural gas production

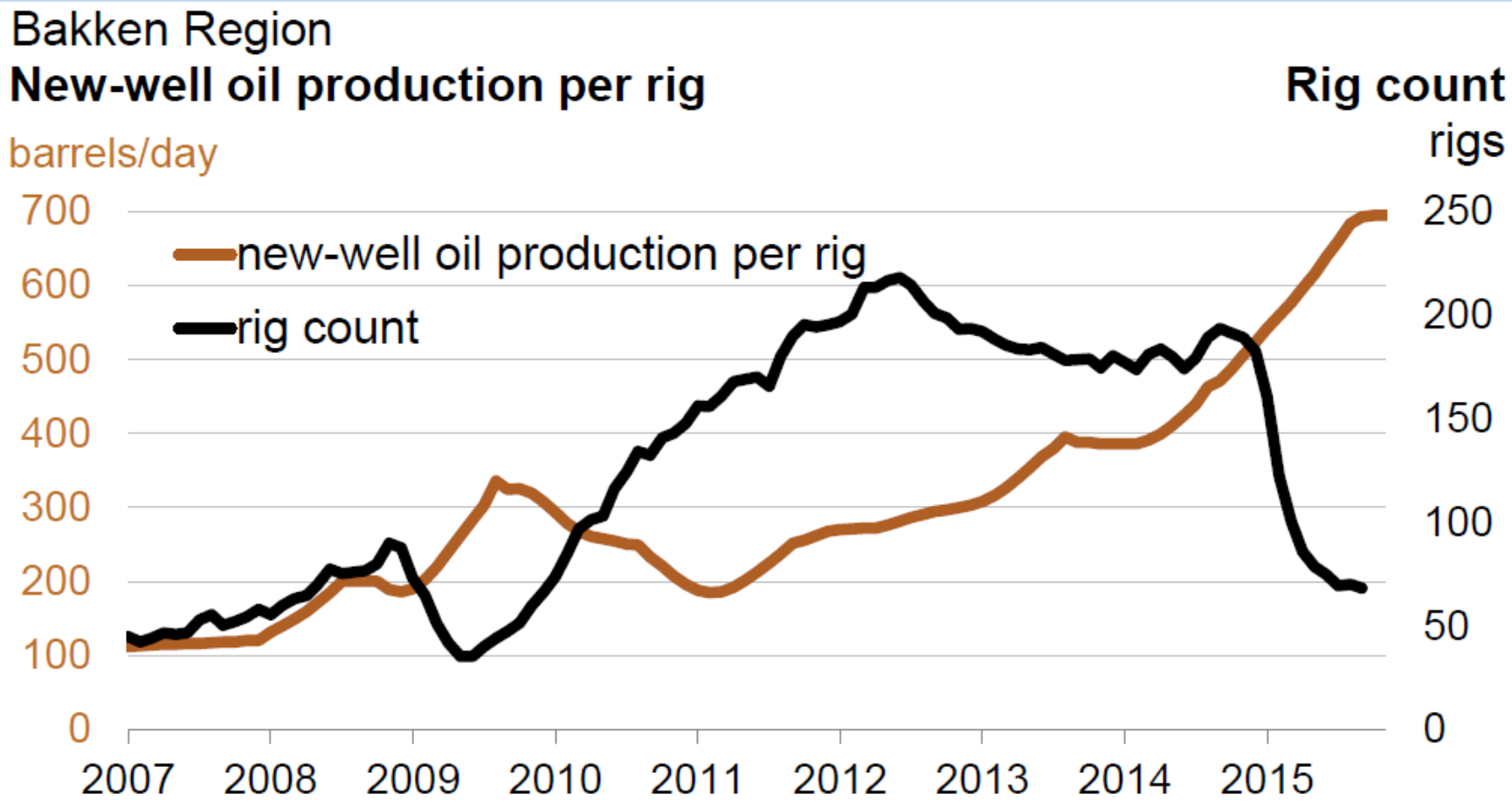
million cubic feet/day



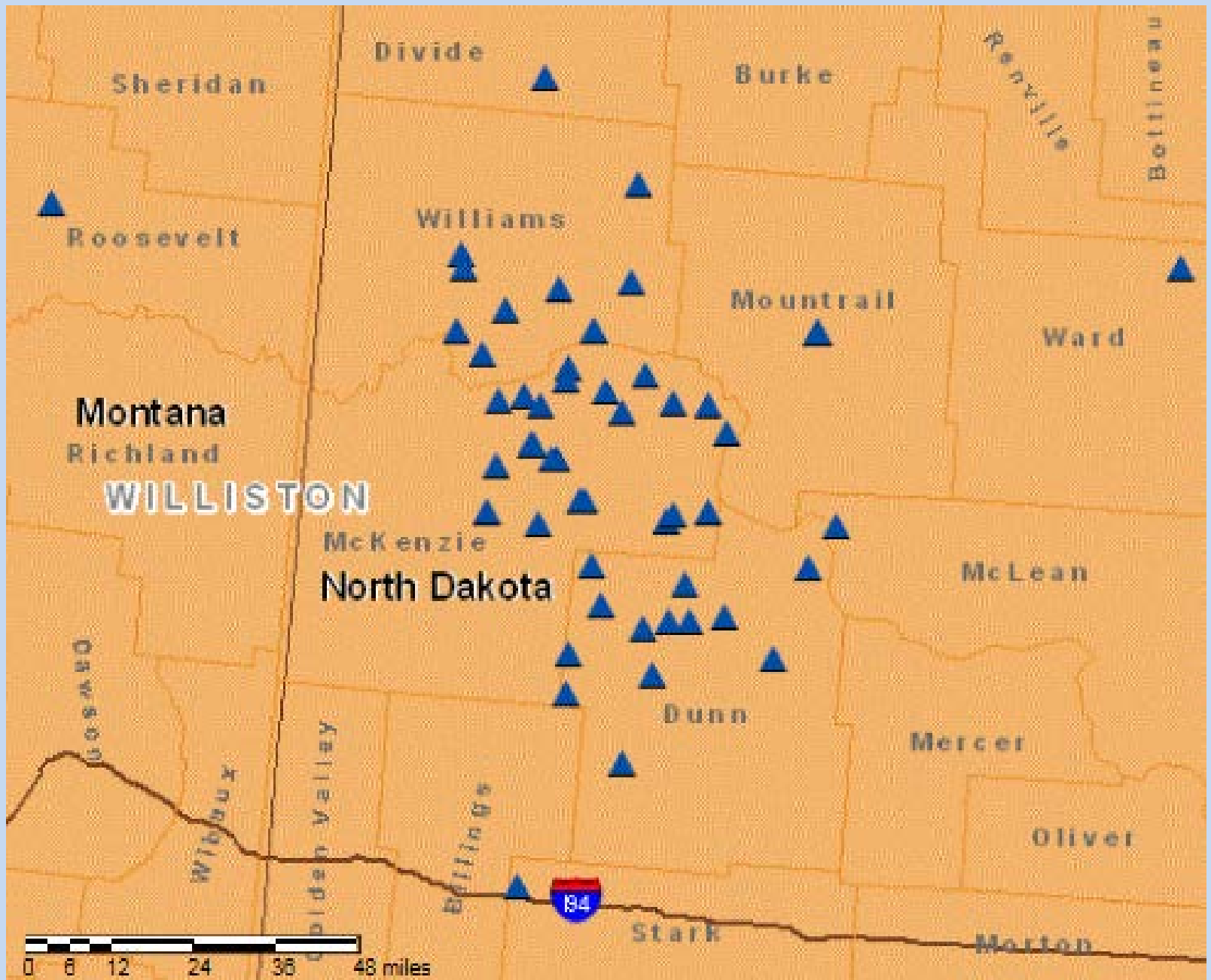
Gas -4
million cubic feet/day
month over month



Source: U.S. Energy Information Administration

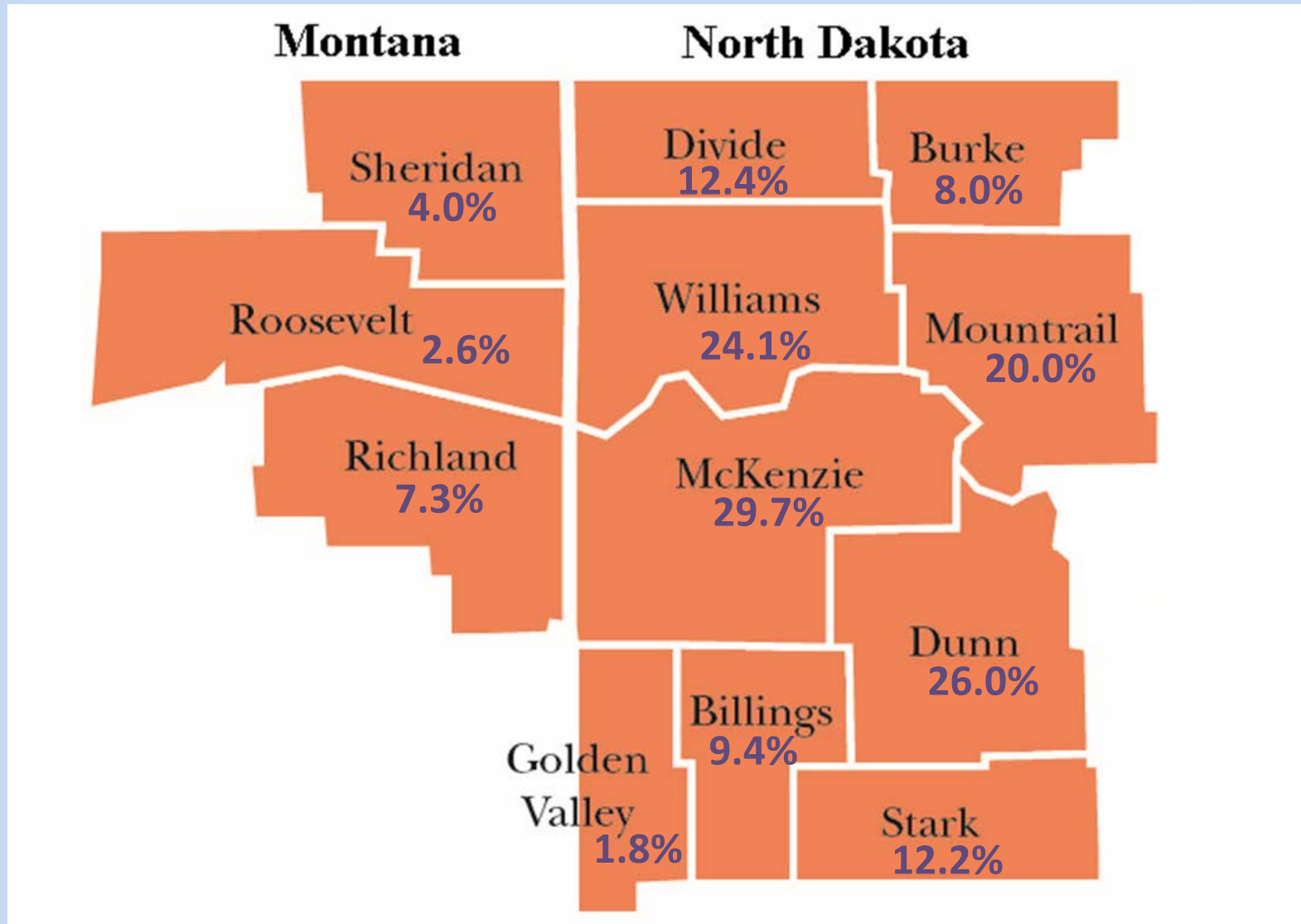


Source: U.S. Energy Information Administration

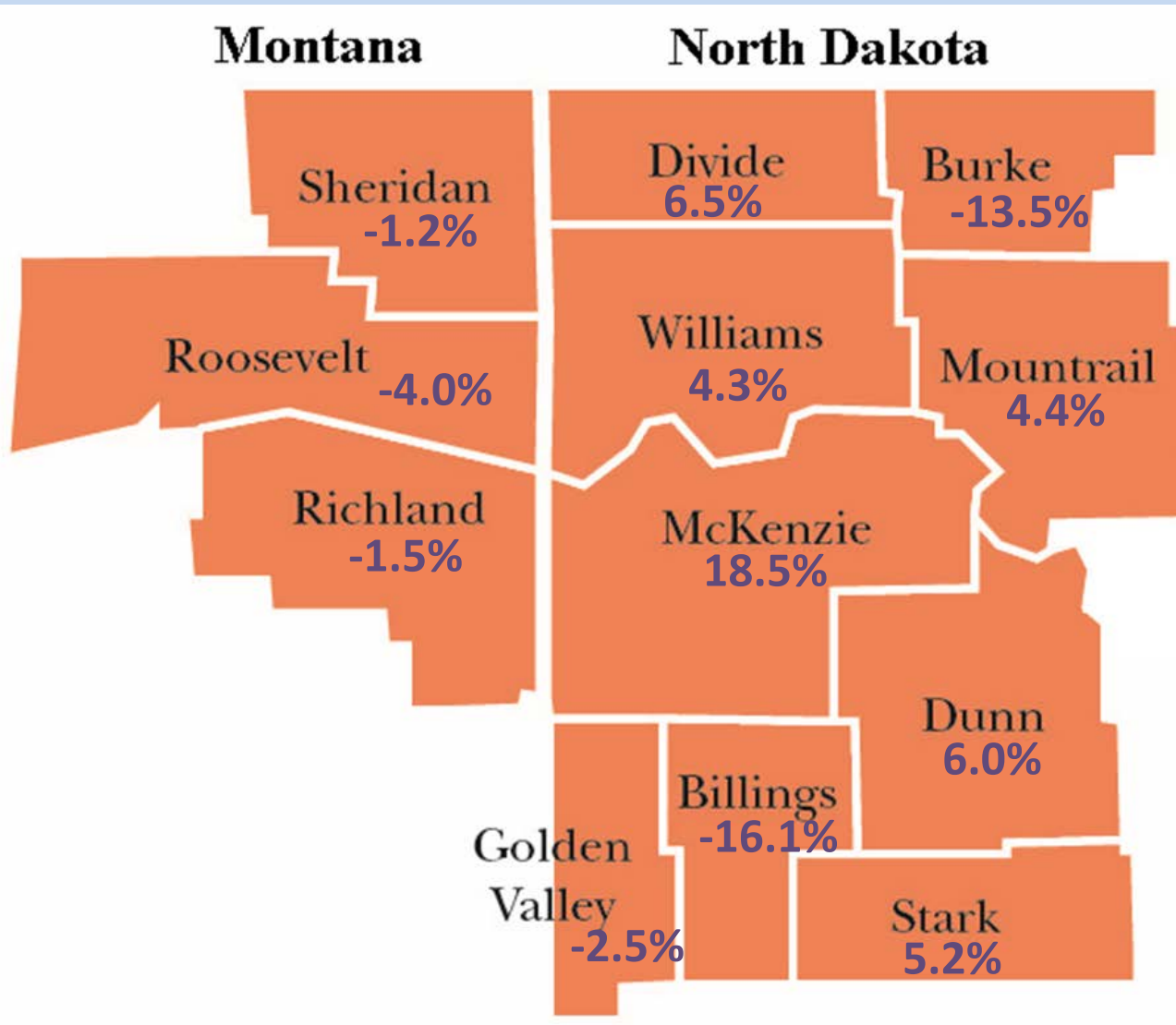


Source: Baker Hughes Interactive Rig Count, Oct. 27, 2015

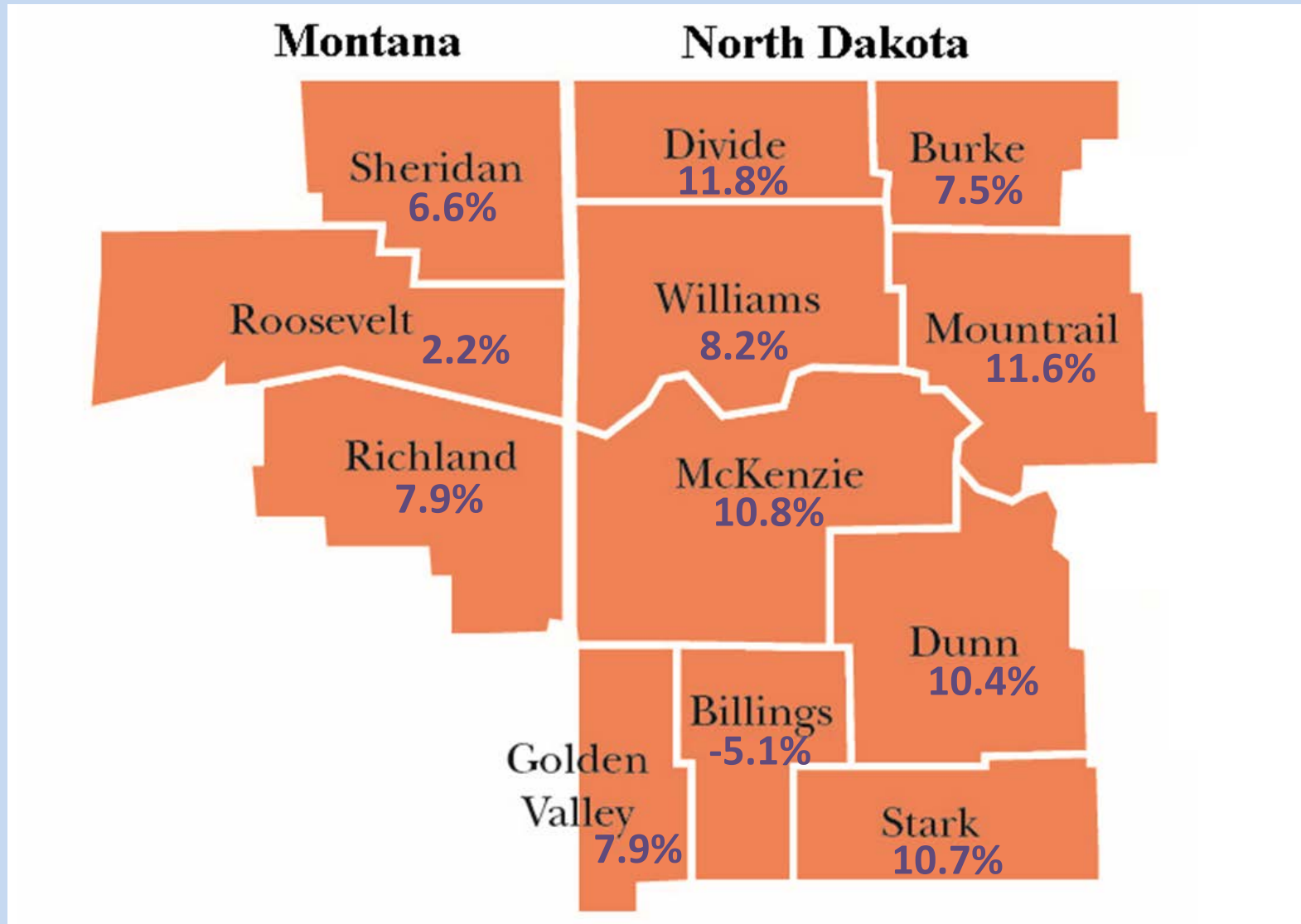
Average Annual Percent Change in Employment Q1 2009 to Q1 2014



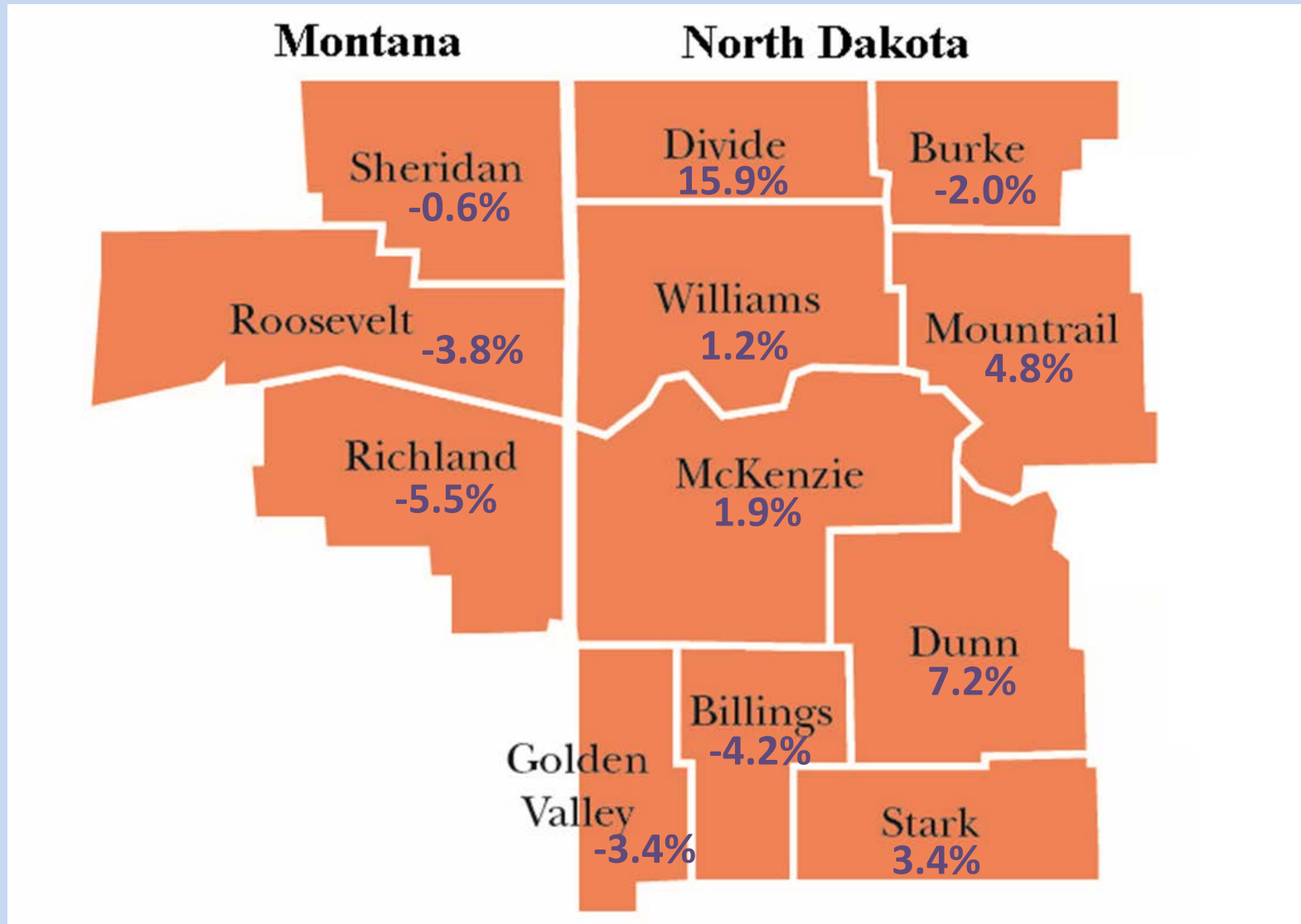
Annual Percent Change in Employment Q1 2014 to Q1 2015



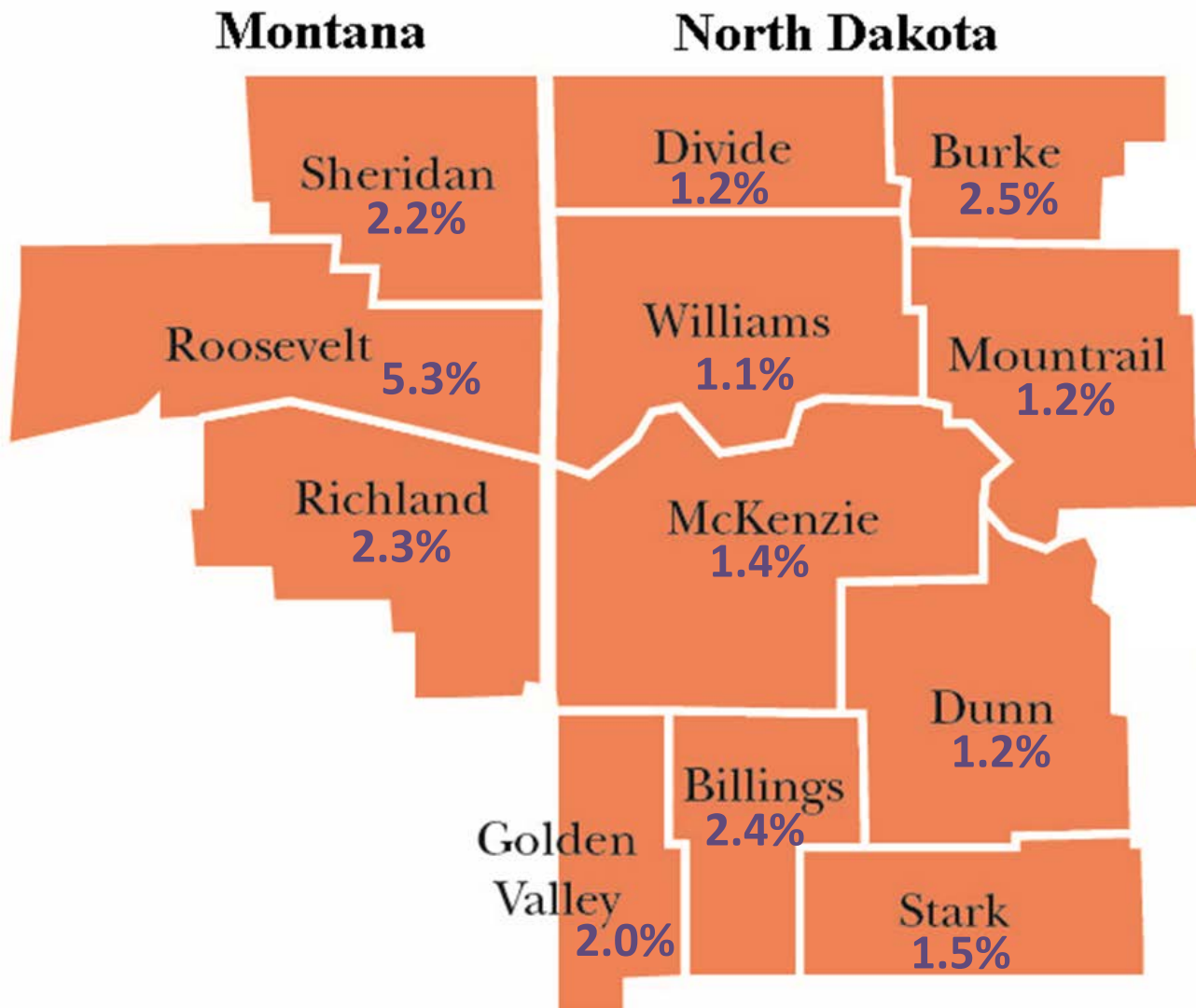
Average Annual Percent Change in Ave Real Weekly Wages Q1 2009 to Q1 2014



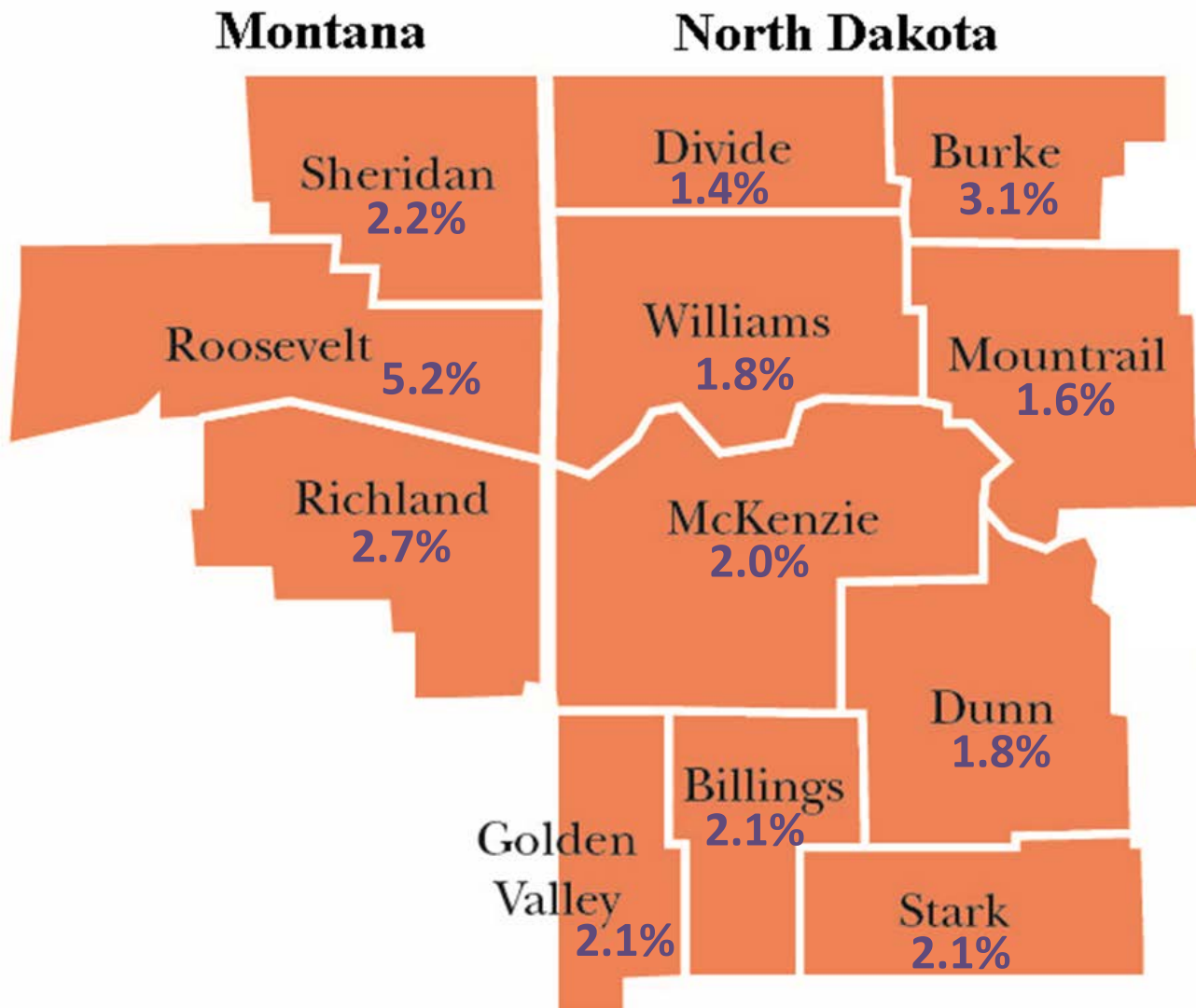
Average Annual Percent Change in Ave Real Weekly Wages Q1 2014 to Q1 2015



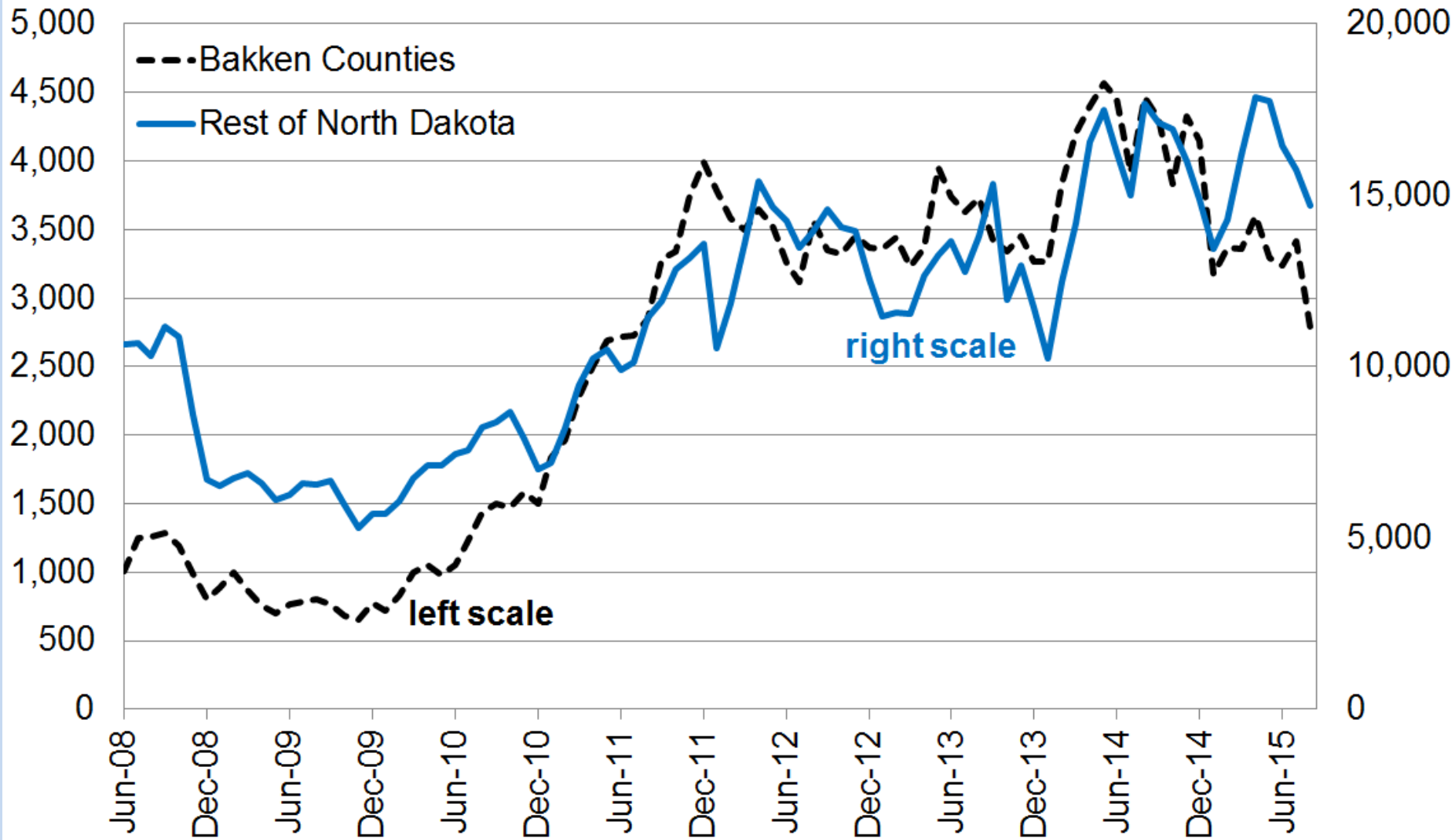
Unemployment Rate July 2014



Unemployment Rate July 2015



North Dakota online job postings



Source: Job Service North Dakota